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THE
JOURNAL
OF THE
ANTHROPOLOGICAL INSTITUTE
OF
GREAT BRITAIN AND IRELAND.



VOL. VIII.

572.05
J R.A.I.

LONDON:

PUBLISHED FOR

The Anthropological Institute of Great Britain and Ireland,

BY

TRÜBNER & CO., 57 & 59, LUDGATE HILL.

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1879.

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THE JOURNAL
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FEBRUARY 12TH, 1878.

JOHN EVANS, Esq., D.C.L., F.R.S., *President, in the Chair.*

The minutes of the previous meeting were read and confirmed.

The following presents were announced, and thanks were ordered to be returned to the respective donors for the same.

FOR THE LIBRARY.

From the INSTITUTION.—Journal of the Royal United Service Institution. Vol. XXI, No. 93.

From the EDITOR.—Revue Internationale des Sciences, Nos. 4-6, 1878.

From the AUTHOR.—Étude sur le cerveau du Gorille. By Dr. Paul Broca.

From the COLONIAL OFFICE.—Statistics of the Colony of New Zealand for 1876.

From the AUTHOR.—Evolution of Morality, 2 vols. By C. Staniland Wake.

From the EDITOR.—Revue Scientifique, Nos. 30-32, 1878.

From the EDITOR.—“Nature” (to date).

Mr. H. C. SORBY read the following paper on Colouring Matters found in Human Hair.

ON the COLOURING MATTERS found in HUMAN HAIR, BY H. C. SORBY, F.R.S.

I should not have ventured to publish an account of this subject at present, if I had not been requested to do so.

Very much still remains to be learned about several questions of considerable importance, and I must apologize for not being able to speak more confidently respecting them. At the same time I trust that what I am able to say will be the means of leading others to investigate the subject more fully. In any case I think I can show that a number of interesting facts may be learned by studying hair in the manner described in this paper.

My general conclusions respecting hair, are that it is a colourless horny substance, variously coloured by three or four distinct pigments. Even if one of these does really exist as such in a few specimens of hair, its amount is so small and its colour so little different from one of the more common, that it does not produce any very sensible effect on the general tint. The others occur very frequently, and the varying tints met with are usually, if not invariably, due to variations in their absolute and relative amounts. It is only in a few extreme cases that any one of them occurs alone.

Horn, being insoluble in water, alcohol and other liquids of like character, the inclosed pigments are to a very great extent protected from the action of simple solvents; but still a certain portion of some of them may be dissolved out of the hair. I must here say that I have always been on my guard against being led into error by the presence of any artificial substances applied to the hair. In many cases I have established the leading facts by means of specimens well known to be in their natural state, and in other cases have adopted suitable means to check the results.

Thus, for example, when some specimens of hair are digested in carbon bisulphite, a yellow oily substance is dissolved, and I should have been very much inclined to refer this to an artificial oil, if I had not found it in hair, to which according to my own knowledge no artificial substances had been applied for the last twenty years. The same yellow oil also occurs so intimately combined with the hair, that it cannot be dissolved out, which could hardly happen, if it were an artificial addition.

Horny Basis of Hair.

In order to more fully understand the action of a solvent on the horny basis of hair it is best to commence with some kind of white hair. I find that the most useful solvent is more or less diluted sulphuric acid. On treating, in a water bath, white hair with sulphuric acid diluted with about 20 times its volume of water, no colour is dissolved out, and the hair is neither disintegrated or dissolved. When similarly treated with sulphuric acid diluted with twice its volume of water, the hair is completely dissolved, and the solution is only slightly coloured.

Knowing these facts we are able to recognize the effects due to the colouring matters, when coloured hair is employed instead of white.

Possible Pink Constituent.

When certain specimens of very red human hair are heated with sulphuric acid diluted with twenty times its volume of water, a very well-marked pink solution is obtained. Examined with a spectroscope this shows a definite broad absorption band, extending from the orange to somewhat more than halfway over the green. The intensity of this band, and therefore also the more definitely pink colour of the solution, depend upon the strength of the acid; and when the solution is more neutral, the band is very faint, and the colour no longer so decidedly red. When precipitated from the solution by some weak alkali, the free pigment has a reddish brown colour, not sensibly different from that of the principal coloured constituent of the hair described below. I am not acquainted with any substance which has similar characters.

I have met with it only in some very red varieties of hair, and then only in small quantity. After it has been dissolved out the hair has almost exactly the same tint as before and therefore the presence of the substance cannot have any material influence on the general tint. It must also be admitted that there is no positive proof that it occurs in the hair in the same state as when dissolved, and is not due to the alteration of some other substance.

Brown-Red Constituent.

On removing the above-named pink solution and heating the undissolved hair in stronger acid, it may be completely dissolved, I have made many experiments in order to ascertain what is the best strength of acid. When diluted with three times its volume of water the solution is in some cases not so complete as desirable; but, if diluted with only an equal bulk of water, some abnormal colouring matters are produced by decomposition. On the whole, strong sulphuric acid diluted with twice its volume of water gives the best result, since it appears to dissolve the hair rapidly without producing any abnormal products of decomposition. In the case of very red hair we can thus easily obtain a fine brown-red solution and little or no insoluble residue. Until very lately I thought that the colouring matter thus obtained in solution was identical with that in the hair itself, but have found that it is probably a modified substance of very similar colour, but having some very characteristic differences.

In order to obtain perfectly satisfactory results we ought to

be able to dissolve the horny matter of the hair and leave the pigments in an unaltered condition. It may be doubted whether this is possible, but by care we may partially succeed and obtain results which serve to indicate what is probably the true condition of the pigment in the hair. On heating the hair in sulphuric acid diluted with twice its volume of water to the boiling point, it becomes soft and is at length completely disintegrated without being entirely dissolved. It is difficult to know when it is exactly the proper time to cease to apply the heat and hence the results are somewhat uncertain and variable. If however, successfully managed, though much red colour may be dissolved out, yet still red hair leaves a considerable amount of a dark flocculent substance. After collecting on a filter and washing with water, strong spirits of wine dissolves out a brown-red substance mixed with another of bright yellow colour. These may be separated by agitating the solution with carbon bisulphide, which carries down most of the yellow substance along with the fatty acids and oils, and leaves the brown-red in solution, mixed with a small variable amount of the yellow. On evaporating the solution we obtain a dark red-brown resinous-looking solid, easily soluble in alcohol, but insoluble in water or carbon bisulphide. I am inclined to believe that the reddest specimens which I have obtained are the true characteristic normal pigment of red hair, and not a decomposition product, since the alcoholic solution is of almost exactly the same tint as the very reddest varieties of human hair. The spectrum shows nothing very definite. On diluting the alcoholic solution with water it becomes very turbid, and a brown-red powder subsides on long standing, which may be mixed with a little gum and water, and used as a pigment. In this state its colour is an extremely fine reddish brown, differing no more from that of red hair than might be expected to result from the different mechanical condition. When long exposed to direct sun-light it fades and becomes more yellow, but appears to be very permanent when kept in diffused light.

If the hair has been under-heated in the diluted sulphuric acid, very little of the above substance may be dissolved out by alcohol, unless the insoluble residue be left for a number of days in the cold acid. If the hair be over-heated in the acid, the whole of the red constituent dissolves and passes into two other modifications of the same colour, one soluble in acid, and the other in almost neutral water. It is impossible to say whether one or both of these modifications do really occur in hair or are only formed by the action of the hot acid. On nearly neutralizing the somewhat diluted solution by carbonate of soda, the former modification is at once precipitated, and still more when it is kept warm for several days, as a red-brown powder,

which may be used as a water colour when mixed with a little gum. If the hair be kept long in the acid at gentle heat, a much larger proportion of the pigment may be thus precipitated, and until recently I adopted this method for preparing it, but now find that it is then contaminated with yellower and browner products, due to decomposition. To avoid the formation of these the hair must be heated in the somewhat strong acid to the boiling point, and not kept at a gentle heat for a long time in more dilute acid.

Yellow Constituent.

Traces of this occur in most specimens of hair, but it can be obtained in the largest quantity, and in the best condition, from sandy-brown varieties. When heated in sulphuric acid, diluted with twice its volume of water, a small quantity of a yellow substance is first dissolved out, and afterwards more of the brown-red pigment already described. From the just disintegrated hair alcohol dissolves a considerable amount of a yellow colouring matter, much of which is soluble in carbon bisulphide, but some of it soluble only in alcohol. Like the brown-red constituent this yellow substance therefore occurs in several modifications, in which particular they both agree with some very analogous substances met with in plants, especially in lichens. It gives no well-defined spectrum. A variable amount of the yellow pigment associated with fatty substances is met with in most specimens of hair; and, even in the case of very sandy varieties, comparatively so little occurs in any other condition that I have not yet been able to prepare and use it as a water-colour pigment.

Connection between the Red and Yellow Constituents.

Since nothing is yet known respecting the chemical constitution of these pigments, the true relation between them is still uncertain, but several facts seem to make it probable that they are closely connected, and that perhaps the red may be changed into the yellow by oxidization. It is at all events less stable and more readily decomposed than the yellow.

Black Constituent.

When some varieties of black hair are heated in sulphuric acid diluted with twice its volume of water, only a very pale coloured solution is obtained, but a large amount of a finely divided insoluble black substance is left. If the black feathers of the rook are used instead of hair, this black substance sinks to the bottom, but in the case of hair much of it floats on the surface, clotted together with oil; but it sinks to the bottom when the oil is removed by ether or strong alcohol. There can

be no doubt, I think, that this is the true *pigmentum nigrum* of anatomists. In conjunction with my friend Mr. W. R. Hodgkinson, I have studied this substance somewhat carefully. He has determined its chemical composition with great care, and finds that it may be represented by the formulæ, $C_9 H_8 NO_4$.* It appears to be quite insoluble, and resists the action of strong sulphuric acid; it is decomposed and dissolved by strong nitric acid, but on the whole is an extremely stable compound.

When obtained from hair, in the manner described above, and the oily matter dissolved out by ether, it may be mixed with a little gum and water and used as a pigment. It is a very fine black, shading off into dark brown, and on the whole corresponds closely with Indian ink.

Variation in the Amount of the different Pigments in Hair of different Colours.

Having thus described some of the leading facts connected with the different coloured substances met with in human hair, I now proceed to consider the characteristic differences between hair of various colours. In doing so I shall not attempt to distinguish between the different modifications of the red and the yellow constituents, and in some cases I must be content to unite them together, and distinguish them only from the black pigment.

Very Red Hair.

When very red hair is heated in the diluted sulphuric acid very much of the brown-red substance is obtained in solution, and very little insoluble residue is left. The very red colour is therefore manifestly due to the large amount of the red constituent, and the absence of anything else which can modify its action on light.

Golden Hair.

This differs from bright red mainly in the presence of less of the red substance, and in some of the more yellow varieties of relatively more of the yellow constituent.

Dark Red Hair.

On dissolving it in the diluted sulphuric acid more or less black pigment is left insoluble. This retains some of the red constituent so firmly, that, unless it has been kept long in hot acid, it has a very decided red tint. The presence of this black pigment in varying quantity completely explains the cause of the darker and duller red colour of the hair.

* "Journal of Chemical Society," April, 1877.

Sandy-brown Hair.

This contains a certain amount of both the black and red constituents, but in addition a more than usual amount of the yellow pigment, which readily explains the peculiar yellowish sandy tint of the hair.

Dark Brown Hair.

This is characterised by the presence of a considerable amount of black pigment, but yet not of so much as completely to hide the colour of the other constituents, which cause it to have a more or less red or sandy tint according to their relative amounts.

Black Hair.

The essential peculiarity of black hair is that it contains so much black pigment as to completely overpower the action of any other pigments that may be present. In other respects different samples of black hair may differ very much. Some may contain scarcely any of either the red or yellow pigments, whereas others may contain much. Thus, for example, I found that some very black Negro hair does really contain as much of the red constituent as an equal weight of very red European hair.

Light Coloured Hair.

White hair is simply that which contains no pigments. The various tints of fair hair are due to the presence of only a small amount of any one or all of the different pigments, so that, as far as their relative amount is concerned, they may differ as much as darker hair of very varying tint.

Quantitative Comparison of the Results.

In order to confirm and further illustrate the above general conclusions, I subjoin the following table, which shows the relative amounts of the black pigment and of the united soluble coloured constituents in a number of different specimens, no attempt having been made to distinguish quantitatively the red and yellow pigments. In the case of both divisions the quantity of each in the hair of a negro is taken to be 100, but it must be borne in mind that there is no quantitative relation between the two columns of numbers.

TABLE I.

				Black Pigment.		Brown-red Pigment, with a little yellow.
Rook feathers	..	..	..	500·	..	10·
Negro's hair	..	..	..	100	..	100·
Mane of bay horse	..	..	..	50·	..	180·
Mane of black horse	..	..	..	20·	..	62·

			Black Pigment.		Brown-red Pigment, with a little yellow.
My own black hair	..	..	30·	..	10·
„ redder	..	..	18·	..	50·
„ browner	..	..	10·	..	10·
Brown hair	..	..	12·	..	44·
Redder brown	..	..	10·	..	50·
Very red	..	..	0·	..	100·
White	..	..	0·	..	0·

By dividing the amounts of the black pigment by those of the brown-red, we at once see the relative blackness of each specimen, and by dividing the amounts of the red by those of the black, we see the relative redness, as shown in the following tables:—

TABLE II.

Relative Blackness.

Feathers of rook	..	..	..	..	50·
My black hair	..	..	..	..	3·
„ browner..	..	..	..	..	1·
Negro's hair..	..	..	..	..	1·
My own redder black	..	..	..	..	·56
Mane of black horse	..	..	..	..	·29
„ bay horse ..	..	..	..	..	·28
Brown human hair..	..	..	..	..	·28
Reddish brown	..	..	..	..	·20
Red hair	..	..	..	..	0·

TABLE III.

Relative Redness.

Red hair	..	..	..	..	100·
Reddish brown	..	..	..	..	5·
Brown	..	..	..	..	3·7
Mane of bay horse ..	..	..	..	..	3·6
My own redder black	..	..	..	..	2·8
Mane of black horse	..	..	..	..	2·1
Hair of Negro	..	..	..	..	1·0
My own brown hair	..	..	..	..	1·0
„ blackest	..	..	..	..	·3
Feathers of rook	..	..	..	..	·02

In order to see the total effect, I subjoin another table, giving the amounts of both pigments added together and divided by two.

TABLE IV.

Rook feathers	..	..	..	..	255
Mane of bay horse	..	..	..	..	115
Negro's hair..	..	..	..	..	100
Human red hair	..	..	..	..	50
Mane of black horse	..	..	..	..	46
My own redder black	..	..	..	..	34
Sandy brown human	..	..	..	..	30
Brown human	..	..	..	..	28
My own blackest	..	..	..	..	20
„ browner	..	..	..	..	10
White	..	..	..	..	0

It must be borne in mind that the numbers given in Tables II and III do not show the *quantity*, but the *quality* of the colour. Thus, for example, as far as the quality is concerned, my own browner hair and that of the negro agree, but the total quantity in the latter is ten times as great as in the former, as shown by Table IV.

The quantities given in the above tables can be looked upon as only approximate, and derived from single specimens. I am as yet unable to say whether the results would hold true universally or not. As far as the very limited evidence goes, the intense colouring of the negro's hair is shown conspicuously by the last table, the difference between it and a black European hair being most striking, and it is far more like the horse-hair. The contrast between the blackest hairs and black feathers is no less striking. Various other conclusions might be drawn, if it were allowable to look upon this first attempt at quantitative determinations as anything more than a rough approximation to the truth.

On the Colouring of Hair as Studied Microscopically.

In order to study the internal microscopical structure of hair it should be mounted in Canada balsam. Even on highly magnifying white hairs nothing is seen but clear transparent colourless horn, with a more or less distinct organic structure, which I need not describe. Bright red and golden hair have a very similar structure, but the horny matter, though clear and transparent, is of yellow orange colour. Those light-browns and sandy hairs, which contain a small quantity of black pigment, show vast numbers of minute dark granules, the larger of which are only $\frac{1}{30000}$ th or $\frac{1}{40000}$ th of an inch in diameter, whilst the greater number must be under $\frac{1}{50000}$. These are scattered more or less promiscuously through the horny basis. Passing on to dark brown and pale black hair, their numbers increase, until they may make the hair quite opaque, as in the case of the negro's hair, which is so black that no structure can be seen. I am inclined to believe that the black pigment has a strong tendency to associate itself very intimately with the brown-red pigment, since the horny base of brown hair appears not so deeply coloured as might be expected from the amount of the red substance present. It may be associated with the black granules. This would agree with what I have found to be the behaviour of the black pigment when set free by sulphuric acid, since it very forcibly retains some of the red, which can be dissolved out only by long continued heating with the acid. Even in their purest condition the very minute granules of black pigment transmit a brown light, and this is still more the

case when combined with the red. The cause of the brown tint of hair, which does not contain much of these substances, is therefore easily understood.

Variations in the Colour of Hair due to mere Structure.

The difference between bright and dull hair is easily understood when we examine it with a microscope. It is mainly due to the surface being more or less smooth; and the interior being more or less transparent.

The general tint of hair also depends to a considerable extent on whether each hair is solid or has a central pithy cavity, which reflects back the light. The effect of this is well seen in the case of some white hair. When solid it has a mere grey tint, whereas when filled with the cellular pith it is a brilliant white. On examining such a hair with the microscope and reflected light, the transparent exterior layer appears grey, and the central pith brilliant white. In a similar manner I find that the very bright red colour of some hair is due to the existence of the internal pith. Different specimens of hair differ very much in this character. In some specimens nearly every hair is solid, whereas in others nearly all possess pith cavities. In many cases some hairs are solid and some not; the latter character being perhaps on the whole more characteristic of the lower end of a hair, prior to its falling off, when the amount of material is falling short.

Ethnological Deductions.

I very much regret that I am unable to say much respecting the bearings of my subject on comparative anthropology. My chief aim has been to discover a correct method of examination, and to establish general principles. I have had extremely little opportunity for examining the hair of foreign races, and am quite unprepared to say how far the specimens I have examined represent the general character or only individual peculiarities. Thus, for example, the remarkable difference between the black European and negro hair may not always be so pronounced, though at the same time it is of such a character as to make it probable that some such great difference does really exist. One conclusion may, however, be drawn with perfect confidence. If in the case of such negro hair as I have described, there should be an individual failing in the power to develop the black pigment, the hair would certainly be as deep a red as that of any European. We can thus most easily explain the occasional appearance of red hair in black races. It is not a special production of red pigment instead of black, but an individual want of power to produce enough black pigment to

completely hide the red. I cannot but think that the further application of the methods of examination described in this paper will enable us to explain many other peculiarities in an equally simple manner.

Change in the Colour of Hair due to External Circumstances.

As already mentioned, I found that the brown-red pigment is slowly decomposed and bleached by exposure to strong sun-light. One need not therefore be surprised to find that a similar change occurs in hair itself. My friend Mr. W. R. Hodgkinson, who has studied the chemical composition of the black pigment, informed me that this was most certainly the case with his own hair. He had been accustomed to work in a very well-lighted laboratory, with his hair fully exposed, and remarked that in summer it was a very much lighter brown than in winter. Probably this occurs to some extent commonly enough, though not specially noticed. I am not aware that there is anything to lead us to suppose that such a change takes place in the black constituent. On the contrary we have every reason to believe that its development is increased by the action of light, as we clearly see in the case of human skin. This increase in the amount of colouring matters in a living organism exposed to the light even when they are rapidly decomposed by light when extracted from the living tissue, is strikingly shown when some flowers are grown in comparative darkness, and must, I think, be attributed to increased vital activity. Such an explanation appears to me quite adequate to explain the usual intense blackness of the hair of many tropical races, as compared with that of the more northern. In connection with this I may say that I have found some of my pale-coloured solutions of hair in diluted sulphuric acid do really turn very much darker when kept in direct sun-light, though most solutions of organic colouring matters fade more or less rapidly.

Sudden Changes of Dark Hair to Grey.

Much has been said respecting the sudden change of dark hair to grey or white, but I must say that in many cases the evidence is unsatisfactory. It seems extremely difficult to understand how such a very stable compound as the black pigment could disappear from the midst of dense horny matter, having no vascular connection with the body, and at the same time the occasional occurrence of a very rapid change does really seem to be established by good evidence. In considering this question we must not overlook the fact that an analogous change does apparently occur every year in the case of the Arctic animals, whose dark hair, at a particular season,

changes white in the course of a few days, without coming off. On the whole there does seem reason to believe that, although the black pigment is such a stable compound when acted upon by chemical re-agents, still under certain conditions, not yet understood, it may be altered into some colourless compound. Judging from its chemical composition, our present knowledge is quite inadequate to have ever led us to imagine that such a substance would have absorbed light in such a remarkable manner, and it is quite *possible* that a comparatively simple change in its composition might completely change this character. But, even if this be the case, the difficulty is only half removed. We have still to explain how it is possible that a mental condition of fright or grief should bring about such a rapid alteration in an inert dermal appendage like hair. We could easily enough understand how it might have caused the formation of the pigments to have ceased by loss of vitality, and I feel almost certain that this does often occur; but how such a chemical change could be set up and propagated quickly through a long hair, composed of dense dead horny matter, is to me a perfect puzzle.

Sudden Change of White Hair to Black.

Some time ago I received a letter from Mr. Ogilvie of Yarmouth, giving me some interesting particulars respecting an old gentleman of the name of Brown, lately living in Yarmouth, whose hair was white, and yet four or five days before his death at the age of 89 years, it turned black. At my request Mr. Ogilvie made many inquiries, and learned the above facts from an eyewitness. Those who knew Mr. Brown assert that he was the most unlikely man to dye his hair. Mr. Ogilvie also was told by a lady that after death her husband's white hair turned black. If such a change does really ever occur it also would serve to show that under certain special conditions the black pigment may be more easily formed from or pass into comparatively colourless compounds than its behaviour with powerful chemical re-agents would lead us to expect.

Note on the Scale of the Colour of Hair recently published by the Anthropological Institute.

Since writing the above paper I have been able to examine the various colours of hair shown in (Pl. VI and VII of vol. VII) of the Journal, and it may be well to make a few remarks on them. The mixture of the red and a little yellow pigment, which I have obtained from red hair, when painted on paper is almost

absolutely the same colour as Nos. 3 and 4. This mixed with a little black pigment would give No. 5, and with still more would give No. 7, being what I have called dark red. The light brown, No. 6, though it has, I think, an unnatural greenish tint, must be intended for what I have called sandy brown, characterised by the presence of much of the yellow pigment along with a certain amount of both the red and the black. Nos. 1 and 2, called *fair*, are cases in which very little of any pigment exists, and Nos. 9 and 10, those in which there is so much black pigment as to almost or entirely mask the others, though in all these their relative amount may vary much. Like my own drawings with the natural pigments, many of the figures differ from the corresponding hair in a want of brilliancy, which cannot be avoided in dull paints, this being especially the case in the golden tints.

DISCUSSION.

Mr. LEWIS would ask Mr. Sorby whether he thought the colouring matter in the hair was likely to be affected by external circumstances, such as diet, climate, &c. Anthropologists had always looked upon the colour of hair as one distinguishing mark (amongst others) of race, and it was important that they should know whether such colour was permanent or liable to alteration. A story, concerning which he had many doubts, had lately been circulated to the effect that the hair and skin of certain people who were shipwrecked in the South Seas and obliged to live upon sea-birds and their eggs, for a time, turned white, but resumed their original colours on the resumption of ordinary diet, and he would therefore like to have Mr. Sorby's opinion on the whole matter.

Mr. Cornelius Walford said, as Mr. Sorby seemed to doubt the possibility of any sudden change of the colour of the hair, consequent upon fright or other influence upon the system, he would cite an instance within his own knowledge—the person being an eminent music publisher in New Burlington Street (name and address handed to Mr. Sorby), who by reason of fright from finding himself sleeping in a damp bed, had his hair changed in a very short space of time, from nearly black to quite white, and it had so remained; the gentleman in question being a young man at the time of the occurrence. He would ask whether the lecturer thought it was the colouring matter of the hair, or the substance of the hair itself, which rendered it almost indestructible, except in the case of fire—see the Egyptian mummies? In horticulture, plants growing white or variegated, was supposed to be the result of disease. Was there any ground for a similar theory in regard to the human hair? He threw out these points as being those which seemed to him to possess an interest for discussion.

In reply to the question whether there was any evidence of a change in the colour of hair due to the influence of external conditions, Mr. Sorby said that, as pointed out in his paper,

the brown-red pigment is slowly bleached by exposure to strong sun-light. There appears to be little doubt that this change can take place in the hair itself. Mr. W. R. Hodgkinson, who had analyzed the black pigment, had observed that his own hair became a much lighter brown in summer when freely exposed to much strong sun-light, than it is in winter.

In connection with the discussion on the rapid change of black hair to white, Mr. Sorby said he could only restate what he had said in the paper. In any case it appeared to be a very puzzling question, and about as difficult to believe or to disbelieve the evidence in support of some such change. In a few cases at all events it was difficult to doubt such a rapid change, and yet extremely difficult to understand how any mental condition should cause the disappearance from the midst of a dense horny substance like hair, of such a very stable compound as the black pigment, which resists the action of powerful re-agents, and even when oxidized by strong nitric acid gives rise to a deeply coloured product. At the same time, he said that it certainly was a question well worthy of careful examination, since in most cases the study of such apparently incomprehensible phenomena led to the discovery of unexpected general laws.

FEBRUARY 26TH, 1878.

JOHN EVANS, Esq., D.C.L., F.R.S., *President, in the Chair.*

The minutes of the previous meeting were read and confirmed.

The following presents were announced, and thanks were ordered to be returned to the respective donors for the same.

FOR THE LIBRARY.

From the INSTITUTION.—Sixth Annual Report of the Royal Institution of Cornwall for 1877.

From the EDITOR.—Revue Internationale des Sciences, Nos. 7-8, 1878.

From the SOCIETY.—Proceedings of the Society of Antiquaries of Scotland. Vol. XI, Part 2; Vol. XII, Part 1.

From the ROYAL ACADEMY OF SCIENCES, AMSTERDAM.—Vorslagen en Mededeelingen, afd. Natuurkunde 2c Rks. deel XI; Jaarboek 1876; Processen Verbaal, 1876-77.

From the AUTHOR.—Die Quaternären Fauna von Thiede und Westeregeen, &c. By Dr. Alfred Nehring.

From the ACADEMY.—Atti della R. Accademia dei Lincei, Vol. II, Nos. 1-2.

From the ANTHROPOLOGICAL SOCIETY of BERLIN.—Zeitschrift für Ethnologie, No. 1, 1878.

From the EDITOR.—“Nature” (to date).

From the EDITOR.—*Revue Scientifique*, Nos. 33–34, 1878.

From the EDITORS.—*Bulletino di Paletnologia Italiana*, No. 12, 1877.

MR. JOHN SANDERSON exhibited some stone implements from Natal, and communicated the following paper relative to the same.

NOTES *in CONNECTION WITH STONE IMPLEMENTS from NATAL.*

By JOHN SANDERSON, DURBAN, NATAL.

Having, on the invitation of your President, the privilege of exhibiting a few stone implements, perhaps the first which have been shown in this country in any number, from the Colony of Natal, it may be of interest that I should say a few words on the subject of the present native inhabitants and give you the impressions I have formed as to the probability of their being the descendants of the men who made the implements now before you. I shall have but little to say on the implements themselves, beyond this, that they have all been found by myself within the last few months, and in, or in the vicinity of, the town of Durban.

The country now known as Natal was discovered, as most present are probably aware, by Vasco di Gama on Christmas Day, 1498. The accounts of the early Portuguese visitors which have fallen in my way are very meagre, being simply such as are given in Mr. Major’s “Life of Prince Henry.” I gather from these however that the inhabitants of the present Colony of Natal were at the date named not of the Kafir race, but more probably of the Hottentot or Bushman family, the “black men” being first met with on the east coast of South Africa to the North of Delagoa Bay.

There is therefore historical reason to believe that whatever race may have left traces of its existence in Natal in the form of these stone implements, they did not belong to the Kafir family, unless indeed that family after occupying the country in very remote ages, had been driven out to return only within the last 300 or 400 years. Dutch records of about 200 years back give the names of many Kafir tribes occupying approximately the same positions as they do now, among them being the Amakosa, Amatembu, Amiampondo, Amagcaleka and others, so that the intrusion of the great Kafir family into the countries from Delagoa Bay to the present limits within the Cape Colony may approximately be said to have taken place in the sixteenth and seventeenth centuries, while it is beyond a doubt that the

greater part of these stone implements are of much earlier date, having been found at such a depth and in such positions as probably to indicate that a very long series of years has passed since they were deposited where found. If this view be correct, therefore, it would be rash to conclude that the implements are the workmanship of the ancestors of the present Kafir inhabitants of the country.

At the same time there are two facts to which I wish to direct attention; one is that certain implements of stone are still in use among the native races, among which are perforated balls employed to give weight to digging sticks, and stone hammers still used by native blacksmiths in remote parts of the country, not to speak of the hollow stones with mullers used for grinding tobacco, etc. I have also obtained from the Zulu country, and some years ago sent home, a couple of stone crucibles used for smelting metals, probably copper or possibly silver, the latter metal, however, being no longer in use among them, and among the specimens before you is a small globular crucible which I imagine to have been used for smelting gold, though found 150 miles from any known gold-field.

The other fact to which I have alluded is this, that native literature, small as the amount of it yet published is, contains more than one allusion to stone being employed for cutting purposes. Thus in the Zulu tale of *Usitungusobenhle*, the heroine being pursued by the *Amajubatente*, gets rid of them by casting a rope under pretence of helping them across a river or strait, and cutting it with a sharp stone. And in a specimen sheet of the "*Tales of the Ama-Xosa*" which the Rev. Mr. Shea proposes, should he get adequate support, to publish, one of the characters addresses another in these words:—"With this sharp stone I will cut off your head." (Theal, p. 14).

Dr. Callaway's "*Traditions of the Zulus*," to which I have already referred, contain here and there, I think, traces of an earlier race as well as of usages now no longer practised and to which I may be allowed briefly to refer. Just as Campbell and other writers believe the references to fairies or goblins in West Highland stories in reality to be traditions of a Lap race antecedent to the present Celtic inhabitants, so I am disposed to think, that the cannibals which figure in the tale of *Uhlakanyana* and others, and which are constantly spoken of as "long haired," belonged to another race of men.

"The long-haired cannibal," "as long-haired as a cannibal," are expressions constantly recurring in these tales; and *Uhlakanyana* pretending to help the cannibal to thatch his house, takes the opportunity of sewing his long hair in with the thatch and then leaves him to perish. These references seem to me to point to

some straight or lank-haired race of men as distinguished from the crisp or woolly-haired Zulu who tells the tale.

These cannibals, whatever race they may have belonged to, are first cousins to our own Blunderbores, whom Jack the Giant-killer had to encounter.

They are represented as stupid, so stupid as to allow themselves to be starved while the hero and heroine are feasting before their faces. They surpass "men" in running, but are skilful in nothing else. They are "no longer men;" they neither live in houses nor cultivate the soil, nor do they possess cattle or sheep. In a word, like the ogres and giants of our own nursery tales, they are represented as great lumbering man-eating louts, but so wanting in intelligence as to be deluded by a child.

As I have already hinted, the Zulus and Natal Kafirs are, and for some generations have been, workers of iron; their spears (usually called assegais by the whites) being of various form and size, being employed for cutting skins, dividing meat, carving wood, and for a variety of other purposes, besides being used in war and the chase. But in the Zulu tales I have observed at least two references to the rind of the wili or sugar reed being used as a knife or lancet, exactly as the bamboo is still used in the South Sea Islands. This primitive implement has long been superseded by iron knives of native manufacture, from the ore which abounds in the present country of the Zulus, but may have been unknown in the northern region from whence they came, or which they occupied when the tale took its rise.

In the tale of Usitungusobenhle the King puts a number of girls to death by beheading them on a block, a mode of execution not now practised among the Zulus.

This act of justice is said to have been performed with a sword; but swords, in our sense of the word, are not used by the Kafirs, and if some weapon now no longer employed by them is not intended, a spear or assegai made larger and heavier than usual is probably meant.

The comparatively great value of an iron spear, when metal began to supersede earlier materials, may be gathered from the tale of Uhlakanyana, who by a series of manœuvres similar to those of Grimm's "Clever Countryman" and the heroes of Gaelic, Norse and Ananzi stories, gains at last a war spear in lieu of a mess of edible roots. The rarity of iron may be inferred from the superstitious dread of it attributed to the long-haired cannibal race in another tale, where the sister says to her brother, "Since you have a spear he will be afraid to eat us; for cannibals are afraid of a spear." (Callaway, p. 148).

Among practices which may formerly have been in use among the Kafirs or the Zulu branch of them, but are now unknown,

or the knowledge of which may have been traditionally derived from some earlier race, is that of cooking by means of hot stones, still in use among savage peoples in many parts of the world, and of which we read in Dr. Callaway's Zulu tale of Usikulumi, (p. 42).

Again; excepting one or two tribes driven to eat fish by the famine in the time of Tshaka's wars, no Zulu or Natal Kafir now eats a creature regarded as a kind of snake. But in the story of Isitshakamana, a man goes to catch fish by means of a worm as a bait. The hook is not mentioned, but may fairly be inferred. The present mode of catching fish among these Kafir tribes who use them, is by means of wattled kraals or enclosures which the fish enter at high water and cannot leave when the tide recedes. Baskets like lobster pots are also used.

In several of the Zulu tales the bride is described as wearing a veil, sometimes so transparent, we are told, that if any one put it on, the body could be seen. (*Umkwakaza*, Callaway, p. 201.) No such article of attire is in use among the Zulu Kafirs nor have they any fabric which could be employed for such a purpose. They neither weave any kind of fibre, nor prepare bark-cloth, as the natives do only a few hundred miles further north. The word used for a veil signifies a spider's web, and the name so applied and the traditions in the tale, probably refer to a time when the Kafirs still occupied a country where trees grew which would lend themselves to such a purpose, as is the case on the Kilimane coast; or where cotton or other fibres were woven into cloth, as is also the case further north. Or, what is less likely, the story and the notion of a veil may both be borrowed from some other race.

The native huts or houses of the Zulus are semi-globular in form, made of sticks or neatly thatched over; but in one tale ("Ugungqu-Kubantwana," p. 173), we read of a house so "long" that it was dark inside at the further end.

I shall only refer to one more example, and that not the least interesting, of a practice not now in use among the Zulus, but of which their literature gives us knowledge. In the tale of Umkatshana we are told that when a man dies in this world and has gone to the people who live beneath, they say to him, "Do not come near us at once; you still smell of fire." They say to him, "just remain at a distance from us, until the smell of the fire has passed off." (Callaway, 318.) This evidently implies that burning of the dead was formerly in use although not now practised. And accordingly in Dr. Callaway's later but uncompleted work, the "Religious System of the Amagulu," p. 213, we read that, "at first the bodies of the dead were burnt." But the extract gives us also evidence of a belief in an existence

beyond the grave. This, however, is neither the time nor place to pursue the inquiry.

My object in referring to these points at all is to show that the tales current at the present day among the Kafirs contain by no means indistinct traces of some race preceeding their own, or at least of a different stage of civilization, and one or two of which are even directly connected with the stone age or ages.

The first mention of stone implements being met with in Natal that I am acquainted with in print is that which occurs in a note on Griesbach's paper on the "Geology of Natal," (*Proceedings Geol. Soc. Quarterly Journal*, 1871, p. 69), in these words:—The writer has seen implements of early man which were obtained by Richard Thornton and others in old raised beaches at Natal, near Juanda, and at the mouth of the Zambesi River. Mr. Griesbach visited Natal, if I remember rightly, in 1870, but I happen to know that years before, your President had urged relatives in the colony to search for stone implements in the full assurance that they would be found. I had also for a good many years been aware that they had been found near the Umhloti River but had failed to procure any specimens, except of stone hammers such as are still in use for smithy work. It was not until September 1876 that I found my first specimen; and on the commencement of the government railways, I begged Mr. W. D. Gooch, who had charge of the works on the short North Coast Line and had an extensive acquaintance with stone implements in Copenhagen and other museums, and had besides collected them in Southern Russia and elsewhere to use his opportunities to search for them. Mr Gooch speedily made a considerable collection, and having seen these and accompanied him once or twice in search of specimens, I set to work in other localities around Durban.

With the single exception of fragments of polished stone rings, all that I have found and indeed seen, are exceedingly rude. But when I consider the very limited area of country yet examined, and that only in a few lines of road or railway, I am amazed at their numbers, indicating the whole country to be covered with them. I may mention that among those exhibited are a few fragments of petrified wood from the Free State. In the account of a trip into the Free State and Transvaal which I made in 1851 and 1852, which appeared in the *Proceedings of the Royal Geographical Society*, I have referred to the profusion with which fragments of this material occurred among black clay along the beds of intermittent streams between the False and the Renoster Rivers. The immense numbers, their small size and un-water-worn condition greatly puzzled me at the time.

But on re-examining such specimens as I still had by me, I found three or four apparently worked by human hands, and I should therefore be inclined to conclude that I had fallen in with a manufactory of implements. The specimens are among these exhibited.

I shall conclude these desultory remarks by reading some extracts from a few notes prepared by Mr. Gooch to accompany some specimens exhibited by him in Durban.

Mr. Gooch begins by speaking of the materials of which the stone implements found by him consist. He says :—

“*Materials.*—The classes of stone used in Natal range from hard shale, through the different hard grits to the trap rocks, up to quartz and chalcedony.

“*Age.*—As a rule, however, the less adapted the class of stone to the use required of it, the greater may the age of the deposit in which it is found, be expected to prove itself. For instance, superficial drift sand and late river marls give better specimens, than the deep-lying marl of the coast and the lateritic formations throughout the colony.

“*Deposits.*—The latter formations throughout Natal, at from one foot to four feet below the surface, are nearly always rich in these implements, and the implements seem to be pretty evenly dispersed during that period. Since that deposit, however, there seems to have been some cause operating preventing the deposit of any weapons except very locally; but then they occur somewhat abundantly. These implements, when so found, are of a more advanced type, and if in drift sand are often worked stone and belong to the Neolithic types of other parts of the world. We can then separate the groups into Palæolithic and Neolithic; the Neolithic being confined to the drifted sand above referred to and similar deposits, and the Palæolithic embracing those of the Laterite, Nodular Lime and Marly deposits throughout the colony.

“*Locality.*—The stone implements have been obtained everywhere in excavations, from the Red Hill to the Great Umhlanga in Victoria County, and also at Pinetown, Thornville, Maritzburg, and at Estcourt, in Weenen County. As this is the result of a very cursory inspection of the colony, it may be supposed that they are to be found nearly everywhere.

“*Types.*—The most usual types are :—

- (1) Knives for cutting skins, &c.
- (2) Scrapers for preparing skins.
- (3) Piercers for drilling holes; generally of quartz.
- (4) Moulding tools, for making pottery, &c.
- (5) Chisels for cutting wood, &c.

- | | |
|------------------------|---------------------------------------|
| (6) Spear heads | } Weapons for offence and the chase." |
| (7) Arrow-heads, large | |
| (8) Do. small | |

The President and Canon Greenwell offered some remarks.

The following paper was read by the Author :—

The PRE-HISTORIC CIVILISATION of BABYLONIA, by W. ST. CHAD BOSCAWEN, Esq.

In my lecture this evening it is my intention to endeavour to lay before my hearers some of the chief facts to be gained from the Cuneiform inscriptions respecting the early civilisation of the land of Babylonia.

Tradition has marked out certain spots, on the surface of the earth, as centres from whence radiated the civilisations of certain ethnic groups of the human race. With the exception of Egypt, none can rival the one which forms the subject of my lecture, in antiquity or in the rich traditions which mark it out as a field for anthropological research.

Somewhat over half a century has elapsed since the mathematical genius of Young and the perseverance of Champollion forced the Kabala of Egyptology to yield its secrets, and open the treasure house of buried Egypt. Since the day when the two names Ptolemy and Cleopatra became the "open sesame" of the Egyptian cave of Ali Baba, how many hundreds of inscriptions, and thousands of beautifully written papyri, have yielded up their secrets to the patient labour and research of such men as Birch, Lepsius, Renouf, Chabas, and others. Seeing how that in half a century of research and study we have the main vertebræ of Egypt's story before us, we turn to her annals to solve the problem of her pre-historic patriarchs.

But in this very point the hieroglyphic writing yields us but scant information. In the inscriptions of the earliest of her dynasties we find a fully developed language, a rich and carefully composed phonetic system, and a literature regulated and governed by grammatical laws; in fact, every indication of centuries of philological development. We all know that the growth of a language is not the work of days or years, but of centuries and millenia. On turning to Egypt's most primitive records, we find her far advanced in the scale of civilisation; so high is the linguistic advance at the period of the VIth and early dynasties, that there are only dialect differences between

the writings of this period and that of the inscriptions of the XIXth dynasty; and even of the time of the Ptolemies. In no case are the variations so great as can be found in our own English of the time of Chaucer, and that of the present day. In fact, from the very earliest records of the land of Egypt, we have every indication that the primitive story of the land of Ham is as buried a secret as was its hieroglyphic writing three-quarters of a century ago. The civilisation of the land of the many-mouthed Nile springs before us in full Minerva-like development, and is therefore of but little use to the student of primitive culture.

In tracing the early history of the human race on the surface of the "wide wide world," how scant and few are the materials which the anthropologist can gather on which to found his story of his pre-historic ancestor. Rude flint implements, and fragments of bone: hardly distinguishable from the "chips of nature's workshop" are the few pages in which man traces the history of his fellow man centuries before the Christian era.

If the talisman of Champollion proved the key to a labyrinth whose more subterranean chambers were denied our entrance, in the treasure house of buried Babylon we have a more unfettered license.

When the ingenious conjecture of the young English officer forced the rock of Behistun to yield forth a whisper of the buried past in the simple name "Dariavvs," there was placed in our possession a key which gave an entry to all the chambers of the "seven-cycled treasure-house" of cuneiform literature, and by the aid of which the student could wander far amid the records of the long forgotten past; where each stone has a tongue with which to echo the voice of empires. It is not my intention this evening to ask you to revel in the mythic acts and deeds of that most problematical of beings, "L'homme fossile," nor is it my desire to tax your mind with tales of man's combats with the unwieldly mammoth, and the cumbrous mastodon: I shall rather ask you to read with me what we may well style the autobiography of the pilgrim fathers of Babylonia.

If in the rude bone and flint implements, the student of mankind had but fragmentary and isolated pages in the book of man, what a mass of material is now placed before him in the tomes from the library of buried Babylon. Not only does the new material carry us far back into the azure of the historic past, but the very letters in which the story is written are pictures in which the scribe has handed down to us the counterfeit presentment of man, and manners, in Babylonia centuries before the Christian era. It is by means of these rude paleo-graphical photographs that I hope to be able to lay before my

hearers this evening as full a picture as I can of pre-historic life and society in the Tigro-Euphrates delta.

There are in the culture formations of primitive Babylonia certain erratic veins of matter which, like their geological types the granite, penetrate all the higher formations, and stand out as incongruities on the surface of the more regular strata. It is by means of these veins, which form as it were the shafts and adits in our mine of wealth, that we are enabled to penetrate to far lower depths than those to which monuments give us access, and thus gain a knowledge of the early culture of the land.

Man's earliest ventures in the art of writing were, as we are all well aware, of a purely pictorial nature, and even to this day such a mode of ideography can be seen among some of the Indian tribes, the most remarkable example of this class being the well known and so frequently quoted "petition of the Catfish Indians" figured by Schoolcraft. There is no reasonable doubt but that all the principal systems of palæography now in vogue had their origin at some remote period in this pictorial writing. In so primitive a centre as Babylonia we should naturally expect to find such a system had been in vogue, and in this we are not disappointed.

BABYLONIAN.			CHINESE.	EGYPTIAN.	
PICTORIAL.	HIERATIC.	CURSIVE.			
					sun (402).*
					hand (317).
					fish (442).
					corpse (7).
					wood (221).
					cave (167).
					house (142).
					place (342).

* The numbers affixed are references to the Syllabary in Sayce's *Assyrian Grammar*.

BABYLONIAN.			CHINESE.	EGYPTIAN.	
PICTORIAL.	HIERATIC.	CURSIVE.			
			{ boundary (116).
			* *	god (4).
			—	—	ear (406).
					water (437).
					horn (118).
			+		half (64).
					{ door or gate (171).

The monuments which have been from time to time discovered in the various portions of the Mesopotamian districts vary in their antiquity over several centuries, and extend to a period from the middle of the third millennium before the Christian era until about the third century before that epoch. In this extensive period over which the monumental evidence of Mesopotamia extends, we have art representatives of nearly all the great ethnic branches of the human race. Well may the Jewish commentators have placed in this "garden of the world" the nucleus of human development, and sought to find a theological solution for the problem of linguistic divergences in the legend of Babel confusion.

Here, by the monuments rescued from the ruins of Great Babylon, can we trace step by step the various races who from time to time have held lordly rule in Nimrod's capital, and what a motley crew of kings and chiefs have left their footprints on these sands of time.

In the inscriptions of the earliest periods, we discern a script hardly one degree above the pictorial rude, uncouth combinations of lines, which in many points appear to have had a similar basis of mental workings to those which guided the first scribblers on the banks of the Hohangho and Yangtse Kiang. But to gain the knowledge we require of the pre-historic life of the Babylonian

* The Egyptian star ideograph ★ standing for the phonetic word ★
s-b, a star.

we must penetrate a stratum deeper than the one to which the earliest monuments take us, and then we shall gain numerous points of interest for the student of the human race in its early struggles on the surface of this earth.

Those who have made the ancient languages of India their study, know very well that the sages of the Sanscrit schools compiled, for the use of students, and those who came after, numerous native grammars, dictionaries, and annotated commentaries. These were compiled, in a great number of cases, under the State patronage, and at the expense of the rajahs of various States of the land, and formed part of the library either of the court or one of the adjacent temples.





Such a State patronage of literature was in vogue in Babylonia as early as the twenty-third century before the Christian era, and series of tablets on almost every branch of literature were stored in the temple libraries of Babylonia. The principal cities in which libraries were established were "Great Babylon" itself, *Sippur*, the Sepharvaim of the Hebrews, and *Ayanne*. The great religious library of Babylonia was at Cutha, the sacred city of the land. It was from this city that the originals of the Creation Tablets were obtained by Assurbanipal, and the Assyrian editions of which are in the British Museum. In the early part of the seventh century before the Christian era, and about half a century after the supposed foundation of Rome by the two wolf-suckled heroes, the empire of Assyria entered upon its Augustan age of literature and art, and Nineveh, under the Sargonides, became to Western Asia and the adjacent lands, what Rome was to Europe in the zenith of its power.







It is to the literary patronage and zeal of the last king of the dynasty of the Sargonides,* that we owe the works which enable us to pass beyond the last cycle of monumental evidence in Babylonia, and penetrate into the society of pre-historic Akkad. The royal scribes of Nineveh prepared for the students of the university of the court of Assurbanipal, grammars and vocabularies, as well as elementary handbooks of the ancient language of Babylon, as preserved in the literary heirlooms of the temple libraries.

It is from one class especially of these bilingual documents that a key has been furnished to the primitive tongue of the early inhabitants of Babylonia. This class is known among students of Assyrian as syllabaries, from their furnishing the syllabic values of the cuneiform characters.





















The origin of these documents is at once very apparent to

* This dynasty lasted from B.C. 721 to B.C. 625; some few documents in the library at Nineveh (Koyunjik) are of earlier dates, but all the scientific inscriptions range over this period.

the student. The early language of Babylonia being of a pictorial nature, and every concrete conception was represented by a rough graphic picture, such as a hand by , a fish by , a corpse by , a wooden object by the branch of a tree , as in Egyptian, and so in like manner were pictured by primitive artist-scribes the first expressions of ideas. As long as the language was not of any great growth, this rude pictography satisfied its graphic wants. Each of these objects were called by the name which it had in *vocal parlance*, such as a hand, *SU*; a fish, *KHA*; a corpse, *BAT*; but it is very probable that the idea that these pictures were vehicles of speech was a secondary one. It is manifest to all students of the origin of *written languages*, that the pictographical mode of expression would soon prove inadequate for the expression of any grammatical ideas, and especially pronominal relationships, and, consequently, a system of phonological expression was introduced. Those who have traced the growth of language know that one of the first points in which the pictography would fail, would be in the attempt to render graphically intelligible the various pronominal relationships of the primitive sentence. But this point of failure is but *one* among *many* ways in which a growing language would be hampered by pictography; but as it is one which is of great interest to the anthropologist, and will explain very well the growth of the phonetic system, I will endeavour briefly to sketch the growth of the primitive Babylonian pronouns.

Taking the first personal pronoun, we find in the early inscriptions it is represented by the character which as a phonetic represented the syllable *MU*, and such there is very little doubt was the word in use in Akkadian for the first personal pronoun. But what we wish to see is why should this particular sign  be selected for the expression of such a part of speech; but if we turn to the hieroglyphic and most archaic form of this character, we find it to be so , and becoming in the hieratic or middle stage , and evidently containing a rude representation of the human figure, only placed horizontally,* and a similar form , and more archaic,  is found in Chinese. Now, turning to the original court form, and seeing what further ideographic meanings are attached to the sign , we find such ideas as "name," "to record," "to give," all indi-

* There is very little doubt that in the early days of the pictographic stage of cuneiform writing it was written both vertical and horizontally, as we find the Egyptian. There are numerous characters which indicate such a dual script to have been in vogue.

cating how well suited this ideograph was to the purposes of the expression of the pronominal idea. If we, for example, take such a sentence as might be expressed by the two signs  , or in the hieroglyphic by  —the first a picture of a *man*, and the second a picture of the *hand*, to which is attached the idea of “to give,” “to benefit,” in the syllabaries,—we find a difficulty arising in our minds as to the reading of this simple sentence. Was it “I give,” or did the figure of the human form stand for “man,” hence “he?” and from the study of the cuneiform syllabary it is evident that a similar difficulty presented itself to the first scribblers of pre-historic Akkad. We find in the early inscriptions of Babylonia the pronoun of the third person singular represented according to the phonetic law of harmony by the syllables *UN* - *IN* - *AN*; but of these *UN* is certainly the earliest phonetic, and the one from which the others were formed. The ideograph which represented the syllable *UN* was explained in the syllabaries by the Semitic *nisu*, “man,” and its use in this sense is evident when we find one of the earliest forms of the group representing “king,” or “chieftain,” was *UN* - *GAL*, “man,” “great.” We now turn to the cuneiform group representing this idea of *UN*, and in the modified court script form  *un*, we do not see any trace of the human form divine; but as we go back to the middle writing our form becomes clearer, and as we penetrate further below the crust of culture still more so. Here in the so-called hieratic we have , in which we have but an elaboration of the previous character , which stood for *MU*, the first personal pronoun. Here we may notice as we pass the fact that for *MU* the character has the feet to the right , whilst for *UN* it is placed to the left . But the origin of both in the picture of the human form is evidently clear, and indicates a similar confusion of ideas to that which appears to our sight in the reading of the group  . The plural of the first person singular *WE* was represented by the idea of “many,” “collection,” the sign  being used, which is explained by “to assemble,” “a collection,” &c. In like manner we find the two forms of  and   , *MES* and *EVEN*, both collective ideographs, used for the third person plural “they,” and here we have a like confusion of ideas to that which occurs in the singular. The two forms  and    became in after time the plural forms of nouns. The second of these forms is more probably of a later origin than that in form

Y<<< or Y>>>, which is formed by the combination of the single wedge for "one," followed by the sign of repetition >> twice repeated. The second sign or group I shall have occasion to refer to shortly again, and then shall hope to show its origin as a plural pronoun.

The idea of a second personal pronoun, a person addressed, was a second step in the ladder of progress, and was one which was not taken until some time after the introduction of written communication. But in the character used for the second personal pronoun we seem to have some indication of the idea which the Akkadians held of the relationships of *speaker* and *spoken to*. The ideograph >Z|| zu, which is used for the second personal pronoun in the inscriptions, is also explained by the verbal ideas of "to teach" (*lumadu*), *idu* "to know," *mudu* "knowledge," as well as that of "thou," showing the recognition of the idea of "informer" and "informed." The second plural was formed by the combination of this form and the third person plural, *i.e.*, >Z|| >A>| >A>| zu *enen* = thou + they = ye; thus a very simple arrangement. With the exception, perhaps, of the Chinese, there is no language which gives us so clear an insight into the mental forces and the ideas which worked out the expression of the pronominal relationships in the early stages of linguistic development.

In the early stages of this development in the transmission from the spoken to the written language, when in the earliest steps, there is very little doubt that the pronouns first and third singular and plural were pictorial or conventional in their form, but the second person probably did not come into use until the language had reached the stage of phonetic expression.



Having gained so pleasing a series of results from the examination of the ideographic forms of the pronoun, we will now pass to what will be the more interesting to my general audience, the study of such ideographs as throw light on the subject of the life, manners, and customs of the pre-historic Babylonia. Standing now, as it were (with the key in our hand), at the portal of the seventh and last of the cycles of Babylonian culture, what a host of questioning thoughts arise to our mind with regard to these first toilers in the primitive marshes of the Tigro-Euphrates delta. What did they eat? what clothes did they wear? what manner of gods did they serve? and a myriad other such like questionings, all await their answers from the book of man, a new chapter of which is now open before us.



In tracing the social life of the early inhabitants, there is no















better nucleus round which to centre our investigation than the home which covered the head of the pre-historic man. Here the home life, the home associations, the home rule, were but the models and types which formed the lines on which were built the mighty empires of Nimrod and Assur—empires whose first dawn was in the hut of the pre-historic coter on the borders of the Tigro-Euphrates marsh, and round the threshold of whose fetish-guarded door some few half-savage natives clustered. Empires, of whom in their zenith half the nations of the now known Eastern world were vassals, and before whose bull-guarded portals was seen the wealth and beauty of three of earth's continents.





We now turn to our syllabary, our gallery of pre-historic photographs, and see how our primitive artist portrays his home.


We meet in the syllabary with four ideographs as expressions for house or home, and from them we gain a knowledge of the domestic comforts of these early householders.

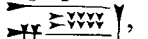


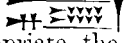
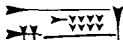
The two first of these groups,  * are two ideographs which both have the common value of hole, "hollow place," as well as "house," the first especially having the idea of "cave," and it is applied to the cell in which the foundation records of a building was placed. The great *inferno* under the earth which was presided over by the god Hea, was called the *Ab-gal*,† or "great cave." The second ideograph also has the idea of "hollow" attached to them. This seems to point very clearly to the day when the pre-historic Babylonian was a troglodyte or cave-dweller, such as were the pre-historic ancestors of the lords of creation who form my audience this evening.


We turn to our picture gallery again, and we find that the most archaic form of our ideograph  is found in  which evidently represents a cave or hole in the ground in plan or section.

The two next forms used for the ideographic expression of the idea of house are              

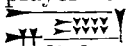














































































the idea of habitation was conveyed by filling in the space with lines as in Chinese  and the Egyptian. We now pass on to the consideration of the ideograph , for "house." We find this is explained in the syllabaries by the verbal ideas of "to establish," or "to build," "to enclose," and as such had its origin in the house, which was the "building," or "the enclosure" *par excellence*. It is evident that the ideograph  is akin to the one , which denoted any enclosed or lined-out spot, such as the house, or an estate.* And we meet with both these ideographs as expressive of the far more important idea of "to dwell." Hence the pre-historic Babylonian house was in every sense the *domain*.
























































































































We now pass to consider the construction of this early cottage, and to glean what idea we can of the materials used in this earliest of mansions. The idea that the ideograph  represented the "wattle-and-dab" construction of primitive house is very possible in the case of the very poorest, such houses being to this day in existence and use among the Arab tribes inhabiting the Afadj or marsh district of southern Babylonia. That is in the neighbourhood of Mughier, and south of the Shat-el-Hil, where grow the enormous reeds which would be well suited for the construction of the rough tents or huts of pre-historic settlers.

It is very evident to the student that as soon as these pre-historic builders had settled in the alluvial plains of Babylonia they began to use the *brick*, but apparently not at first for the domestic house. The wooden and fragile construction of the house lasted some time, as is shown by the ideographs of component parts of the building. The first ideograph which we see in connection with the house is the one , which is composed of , "house," together with the inserted group . This is an inserted group: has the meaning of "ruler," "king," and when we see the meaning of  is "beams," or "pillars," we understand how appropriate the combination of the two ideas was.† In this we see probably a construction of the house by a frame-work of posts with a wicker-work filling up between them. Another example of a curious metaphorical use of the ideograph  is found in the phrase in a







* The phonetic value of these is *MAL*, of the second *MAR*, which philologically supports their relationship.  is a common ideograph for "field."







† Beams = house rulers; the Assyrian *gusuru*, "binder," "holders," implies the same.

prayer of Esarhaddon's (W.A.I. IV, 67), where we have               , *gusuri-libbi*, "beams of the heart," applied to the ribs. In the walls of the house was a door, one of the names of which was            , *GIS-IK*, literally "wood of opening." The threshold was called the "wood to enter." Another name of the door was simply "the opening," and the symbol here was the same as that of "gate," so familiar in the name of Babylon,            , the hieratic form of which we find was             and             as the pictorial, a rough representation akin to the Chinese   or  , which is also a "gate." and the ending represents a rough ground plan of an entry. Its phonetic value KA would lead us to connect its derivation with            , KA, "the mouth," which is sometimes called the "door of the body." This connection of door with hole and mouth would again appear to point to the original cave dwelling. The same idea of opening satisfied the idea of window as well as that of door, both being represented by the same ideograph.

Within the house, or closely attached to it, was a building or *locus* bearing the name           , which you will see is composed of the ideograph            , "house," and with the ideograph            , meaning "second," attached to it, and it was probably a small private sanctum portioned off from or attached to the house. It became in later time to be used for the altar or altar court of the temples of Assyria;* it was in the first case a species of "harem," or private enclosure. In front of the house, or adjacent to it, was a plantation or garden. This is shown by the ideograph            , SAR, "an estate," the archaic form of which was            , the plan of a house and attached garden; and from the reference in several of the later legends to the "trees flourishing outside the door," it would appear that the shady grove was an adjunct of every early Babylonian estate. Most of the early estates in this land of fertility, were it appears divided from one another by canals or ditches, which served for the watering of the soil. This is shown by the ideograph            , SA, of which the archaic form was            , and the middle or hieratic             which denoted a boundary, and evidently represented the two banks of a canal; and the ideographs             and            , the former of which denotes a "bank

* Explained by the Assyrian *kisallu*, altar. Aram. כסלל.

of a stream," is evidently composed of "estate" and "river-bank." The second means a district, and is composed of "border" and "place," evidently denoting a specified area. Indeed, the ideograph for canal, , is a most simple combination of , denoting any channel, and , an ideograph denoting running water, although I am inclined to think it was of later invention, and may primarily have denoted "stream," "river;" and another ideograph of similar construction for stream is , composed of  and .

Having, as it were, pictorially walked round about the neighbourhood of the domicile of our pre-historic host, we will return to the house from whence we started, and ask our guide the honour of an introduction to his family circle. The first and most important person in the house was the mother, who bore the most significant and important name of , *dammal*, "house lady," but the pictorial character of the sign carries far more than our expression "lady of the house." She was the "house god," and as such in the early historic times in Babylonia we find her treated. Her person was sacred in the family, and any offence against her was punished with the very utmost severity. But this ideograph  has another idea, evidently a secondary one, derived from the primary one of "the mother"—that is, "to enlarge," "to spread;" so the mother was the spreader, the enlarger of the family and the race. Another name of the wife was *murnū*, but this was of later origin, and meant the "bearer of children," and as such she was respected by those children with a god-like respect. It is curious to note here by the way that in historic times the name *murnū* was given to cities, and hence the idea of "motherland."† From the mother we now pass to the children. These were called firstly in an abstract sense , *tur-mes*, "little ones," and were divided in , *rak*, "little ones" (male, or boys), and "little ones" (female), , *tur-rak*, or girls; the former of these being considered evidently the most important, as we find the sign  standing in a particular sense for boy as "the child." Having now seen the relationships of our guide's wife and children, we pass on to consider his own position, which requires but one moment of consideration. He was a small king, with absolute power over all around him, his wife included. His

* The canal was called *khigallu* in Assyrian, a word borrowed from the Akkadian *KHI-GAL*.

† The mother had many names in Akkadian, according to her various duties in the family.

position as father was expressed by the ideograph $\Xi\Xi\Upsilon$, *ad*, which was probably one of the oldest in the syllabary, yet it appears to me to admit of analysis, as it contains two signs— $\Xi\Xi$, an ideograph meaning “glorious,” “respected,” and Υ , the straight wedge indicating a person, the father being the glorious or respected person of the household. We will now leave the parents to their own devices, whilst we proceed to inspect the rest of the household, beginning with the juvenile portion of the family. Of course, to use a somewhat Irish expression, they being boys and girls, were brothers and sisters. How did they gain the ideas of such relationships. We see the sign for brother was $\Xi\Xi\Upsilon\Upsilon$, the analysis of which is very simple, it consisting of the sign $\Xi\Xi\Upsilon$, “man,” with the addition of the sign Υ , “repeated,” that is “duplicate man,” or brother. A sister was called $\Upsilon\Xi\Xi\Upsilon\Upsilon$, that is “female + duplicate + man,” or sister.

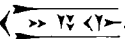






Having now completed our acquaintance with the family circle, let us proceed to inspect the sanctum of the domestic housewife, the “servant department.” The male servant was called $\Upsilon\Xi\Upsilon$, *eri*, an ideograph which affords no clue to the origin of the name. The Semitic rendering in Assyrian being $\Upsilon\Upsilon\Xi\Upsilon$ *ar-du*, literally “menial,” from the root $\Upsilon\Upsilon$, seems to afford some clue to the position. The female slave was expressed by the ideograph $\Upsilon\Upsilon$, composed of Υ , “woman,” and Υ , “of the land.”



Dismissing the family of our host, we will now devote some few minutes to the inspection of the food which, if of a hospitable nature, this primitive landlord could place before us.

Seats of wood ($\Xi\Upsilon\Upsilon\Upsilon$) were placed round the room. No mention is as yet found of tables, but cups and plates were in use. The ideograph of cup is curious, as it appears to connect itself with $\Xi\Upsilon\Upsilon$, “hollow.” We have for cup $\Xi\Upsilon\Upsilon\Upsilon$ = $\Xi\Upsilon\Upsilon$ + Υ “repeated hollow.” The ideograph for plate does not admit of any explanation by analysis. The flesh of the wild bull or buffalo found in the marshes appears to have formed the principal solid food. In a calendar which I discovered some months ago, the direction, “flesh, even bull’s flesh one eats” ($\Xi\Upsilon\Upsilon\Upsilon$, literally “bull’s body”), shows of what importance this food was.

Milk was called *NI-NUNA*. Honey was represented by the ideograph $\Xi\Upsilon\Upsilon$, and the Assyrian rendering was *dispu*, the Heb. דִּשְׁפָּה; the bee was called $\Xi\Upsilon\Upsilon\Upsilon$, “fly of honey.”


A large number of various kinds of fish were known, and a quantity of animals of the gazelle breed were found on the borders of the two streams of Mesopotamia.

The wonderful pliability of the cuneiform syllabary in expressing the characteristics of animals described is shown most markedly in the name given to one of these gazelles . The sign  is probably a species of cartouche enclosing the group, the rest being the name of the animal, the analysis of which is  "running,"  "water,"  "eye"; that is, "running tears," the tear-drop being, as many know, a mark in some of that class of animals. The sheep () and the ox () were domestic animals, and consequently would supply meat for the table of the Akkadian householder.

Some kind of cereals being known, probably wheat, as we find one named  *se*, "the white grain." A second grain was called  "the half-grain," or inferior one? Thus we see that the cuisine of the hospitable host of pre-historic Babylonia was an extensive one, and capable of providing a rich banquet.

There are of course in the inscriptions which have been discovered in Babylonia, a vast number of other facts relating to its domestic civilisation, which time will not permit me to refer to this evening; though I hope at some future time the Institute will do me the honour to allow me to lay them before the members.

I will now endeavour briefly to sketch the formation of the primitive Babylonian city, and here the syllabary is a most important aid to our researches.

It is to be noticed on examining the sites of all the primitive cities of Babylonia, that they have one common characteristic, in their being built on raised mounds above the level of the surrounding plain, and the cause of this is to a great extent to be attributed to the influence of the periodical rise and consequent inundation of the delta by the rivers Tigris and Euphrates. In the majority of cases these mounds appear to have been of artificial construction, and consequently, from their height and extent, they indicate the existence of a considerable population at the period when city building commenced. There is no doubt that the majority of the houses which formed the dwellings of these citizens were of fragile construction, such as I have described in the early part of my lecture; and it is curious to note that the prison-house is called  "the brick house," as distinguished from the other dwellings of the people. Another name of the prison, which is curious in its construction,

is ideographically written $\mathbb{E}|\mathbb{L}$ $\mathbb{L}|\mathbb{E}$, composed of $\mathbb{E}|\mathbb{L}$, being an ideograph meaning, "a low hollow place," and $\mathbb{L}|\mathbb{E}$ the common ideograph for "darkness." So that we see that even in pre-historic times the low and disorderly Akkadian rough was consigned to a black hole, there to meditate on the error of his ways. The most important and striking edifice in this pre-historic city, was the acropolis, which bore the name of "the high or raised place, $\mathbb{L}|\mathbb{E}$ $\mathbb{L}|\mathbb{E}$, and on which was placed the temple of the presiding deity of the city. The temple in these early cities bore the name of $\mathbb{E}|\mathbb{L}$ $\mathbb{L}|\mathbb{E}$, "the house of god." Near this was the palace, called $\mathbb{E}|\mathbb{L}$ $\mathbb{L}|\mathbb{E}$, "the great house." Here dwelt the chieftain who held lordly sway over the lives and persons of these early members of the human race.


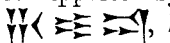
What a difference between the rude half-timber, half mud-built dwelling of this pre-historic ruler of men, with its rude log-seats and its quaint fetish-guarded portals; and the fair palaces of great Nineveh.


"Whose eaves with gold, whose walls with vermiel blazed,
With aisles on aisles in lustrous long array,
And opal domes that flashed a blinding ray.
There fringed palms for ever waved a shade
O'er gay decked roof and chequered colonnade;
There sheeny fountains danced, there hung on high
The terraced garden's leafy tracery.
And many a dreamy paradise between
Peeped 'mid the glare calm aisles of dewy green."









Yet with all its rude art, and ruder construction, the pre-historic palace of the Akkadian city was the first step on a ladder of architectural development which culminated in these vast wonders of the buried past.

Most important features in these primitive cities were the fortifications which guarded them from the attack of neighbouring tribes. These appear to have been of a very simple construction, being, like the majority of the erections in the city, of wood. This is shown by the ideograph which stands for "fort," $\mathbb{L}|\mathbb{E}$ $\mathbb{L}|\mathbb{E}$; this is the ideograph of "city" with that of "wood" $\mathbb{L}|\mathbb{E}$ inserted within it; showing that the primitive fort was the "wood of the city," and indicating the fact that the early ramparts of these cities were palisades such as are in use among the tribes of Africa and Polynesia.* This idea is substantiated if we examine the appearance of the early brick walls, with their semicircular piers, which have every indication of having been built from wooden models.



* See the notes in F. Lenormant's "Etude sur quelque parties des syllabaires cunéiformes," pp. 121, 122, 123, 195.

Before leaving the consideration of these pre-historic cities, I must in passing refer to one important civic institution, which we are apt to pride ourselves upon in this great Babylon of ours. Among the officials whose name is found in the syllabaries as having been known to the Akkadians, I am sure there can have been none who was more important to the development of civilisation and culture than one whose name is written , *man + goes + goes*, really meaning "man who goes and returns," or "goes to and fro," in whom we may recognise our great and respected friend the policeman. This identification is supported by the Assyrian translation of this title, which is , *kha-i-dhu*, "the watchman," which is cognate with an Arab word meaning the "patrol." By day and night the early city was thus watched by the pre-historic guardians of the peace, and no doubt many an unruly young Akkadian was frequently by their agency consigned to "durance vile."

The political constitution of these cities appears to have been a sort of commune, in which all the males of a full age had the right of voice in the affairs of State, as we see that the ideograph for the assembly or local board is , "city," with the inserted ideograph of "half," showing that at least half the population had a voice in the regulation of civic affairs.

As regards military power of these early centres of power, every man was a soldier, as is shown by the sign , standing alike both for man and soldier. All the principal savage weapons were in use. The sword was called , or a "wood of power," as well as the "weapon," and I am thus inclined to think that its equation with the Assyrian word for sword is probably an after-thought. The sword being the Assyrian weapon, was equated with the Akkadian , the principal weapon of primitive Akkad, which in all probability was the club. The spear was known as , "the pointer," or "the piercer," and hence its application to the lightning.* The bow and arrow were known, and were coupled in Akkad as we do in our speech, as is shown by the ideograph , the group  evidently being a squared form of , and the sign  inserted is the ideograph of swift motion, hence used for arrow.†

* This ideograph also stood for "sword" as well as "spear,"

†  and .

MARCH 12TH, 1878.

JOHN EVANS, Esq., D.C.L., F.R.S., *President, in the Chair.*

The minutes of the previous meeting were read and confirmed.

The following presents were announced and thanks were ordered to be returned to the respective donors for the same.

FOR THE LIBRARY.

From DR. PAUL BROCA, HON. M.A.I.—*Revue d'Anthropologie*, No. 1, January, 1878.

From the SOCIETY.—*Bulletin de la Société Impériale des Naturalistes de Moscow*, No. 3, 1877.

From the AUTHOR.—*Anthropological and Archæological Fragments from 1866 to 1876.* By Col. A. Lane Fox.

From the SOCIETY.—*Proceedings of the Literary and Philosophical Society of Liverpool*, Vol. xxxi, 1876-7.

From PROF. A. ECKER, HON. M.A.I.—*Archiv für Anthropologie*, January, 1878.

From the EDITOR.—*Revue Internationale des Sciences*, Nos. 9 and 10.

From J. EDWARD LEE, Esq.—*Lake Dwellings*, 2 Vols. By Dr. F. Keller. Translated by John Edward Lee.

From the EDITOR.—“*Nature*,” to date.

From the EDITOR.—*Revue Scientifique*, Nos. 35 and 36, 1878.

From the AUTHOR.—*Zur Kenntniss der quarternären Fauna des Donauthales.* By Prof. A. Ecker.

From the EDITOR.—*Matériaux pour l'histoire de l'homme*, December, 1877, January, 1878.

PROF. A. GRAHAM BELL delivered a highly interesting address “On the Natural Sign Language of the Deaf and Dumb,” but as the illustrations consisted mainly of manual and facial changes, a reprint of the address cannot be here given.

MARCH 26TH, 1878.

JOHN EVANS, Esq., D.C.L., F.R.S., *President, in the Chair.*

The minutes of the previous meeting were read and confirmed.

The following presents were announced, and thanks were ordered to be returned to the respective donors for the same:—

FOR THE LIBRARY.

From the COLONIAL OFFICE.—Colonial Office List for 1878.

From the AUTHOR.—Lectures on the Science of Language; 2 vols., 9th Edition. By Prof. Max Muller, Hon. M.A.I.

From Prof. F. V. HAYDEN, Hon. M.A.I.—Bulletin of the United States Geological and Geographical Survey of the Territories.

From the ASSOCIATION.—Report of the Geologists' Association for 1877.

From the ASSOCIATION.—Transactions of the Social Science Association for 1877.

From the EDITOR.—Nature (to date).

From the EDITOR.—Revue Scientifique. Nos. 37 and 38, 1878.

From the EDITOR.—Revue Internationale des Sciences. Nos. 11 and 12, 1878.

From the AUTHOR.—The Future Australian Race. By Marcus Clarke.

A Paper was read by FRANCIS A. ALLEN, Esq., on "The Original Range of the Papuan and Negritto Races."

The ORIGINAL RANGE of the PAPUAN and NEGRITTO RACES,
by FRANCIS A. ALLEN, Esq.

AMONGST the numerous and interesting questions which yet remain unsolved in connection with ethnology and anthropology, few, I venture to think, exceed in interest and importance the question of the origin, affinities, and original habitat of the Papuan and Negritto races.*

These Papuans and Negritos (sometimes called Oriental Negroes or the Oceanic black race) undoubtedly present a very great difficulty to the man of science, and so little is even now known of their languages, customs, and traditions that it seems impossible to form any very confident opinion regarding them.

* I couple these races together as the subject of my paper because they are both located in the same area or at any rate overlap and intersect each other, and are thought by many writers to be cognate.

Nevertheless, it is highly important that something should be attempted, since, by reason of their unsocial habits, and of the encroachment and persecution to which they have been subjected by the white and brown races, they bid fair at no very distant date to vanish entirely from the muster-roll of nations.

In Tasmania the aborigines are already extinct; in Australia they are rapidly fading away; in Fiji even, where they appeared to be most flourishing and powerful, diseases lately introduced by Europeans bid fair to make a speedy end of them; whilst, throughout all the East India Islands, the brown races have either extirpated them or driven them into the inaccessible fastnesses of the interior.

My desire, to-night, is not so much to describe the Papuans and Negritos as they at present exist or have existed in Papua, Melanesia, Australia, Tasmania, Ceram, the Philippines, Sulu Islands, Borneo, the Sunda Chain, and in the Andamans, as to point out a few facts which lead me to suppose that these races once occupied a very much wider area than they do at present, being closely connected at a remote epoch with the black races of Africa on the west, and even reaching as far as America on the east; besides forming, very possibly, the aboriginal population of, at any rate, *Southern Asia*.

Considerable difference of opinion exists, I need hardly remark, as to what the Negritos or Oceanic Blacks are, and as to how they should be divided. Crawford supposes that there is but one race of Oriental Negroes north of the equator, and two races in the Malay Archipelago and New Guinea. Latham doubts their existence at all on the smaller islands. The more general conclusion, however, seems to be that there is but one race of Oriental Negroes, and that the Australians and Tasmanians must be connected with it. Then again the origin of the Papuans is disputed. Some regard the Negritos as merely a variety of the Papuans, debased and stunted by hard usage; others regard the superiority of the Papuans as being due to an admixture of Malay blood.

Mr. Wallace,* a very high authority, and, I believe, Mr. Crawford, incline to maintain that the Papuans are the aborigines of a former Polynesian Continent, and stamp the *brown* race as the hybrid—the black race being, in their opinion, the aboriginal one.

H. C. von der Gabelentz, after a careful investigation of the Melanesian dialects, concludes that all the Melanesian languages, though disintegrated and apparently separated from one another, owing to the barbarism and isolation of the

* See Wallace's "Malay Archipelago," Chap. XV.

tribes, do yet belong to one stock. He is also of opinion that, both in the roots and in many grammatical peculiarities, there are numerous remarkable resemblances between the Polynesian and Melanesian languages, so that the hypothesis of their common origin he regards as a highly probable one.*

It seems reasonable to regard both the black and brown races as successive off-shoots from the Turanian stock; but the position of the black race in the interior of the islands and its constant persecution by the brown race prove, I think, very clearly its superior antiquity. Possibly, also, the Negrittos may have preceded the Papuans themselves in their islands.

I must not omit to allude here to the Fijian race, which increases the general confusion, being apparently composed of conflicting elements, and having a language said to be one-fifth Polynesian, and four-fifths unlike any other neighbouring tongue. Nevertheless its manners, customs, and habits prove it, I think, to be *mainly* Papuan. Without dwelling further upon these elements of difficulty in treating the subject, I will proceed to call your attention to the external resemblance which has been so often remarked between two widely separated races, *i.e.*, the African and Oceanic black races popularly called Negro and Negroid respectively.

I do so because Professor H. G. Seeley has recently revived a hypothesis which I think unnecessary and misleading regarding them. Fully agreeing as I do with the learned Professor that the resemblances between the two races are too numerous and remarkable to admit of any other interpretation than that of a common origin at some remote epoch, I do not feel disposed to coincide in the *theory* by which he attempts to account for their present separation. He said in the first of his lectures upon Evolution, delivered lately in London,† that “though the Negro is now almost confined to Africa, and is not migratory, yet formerly a ridge of land ran *viâ* Madagascar, the Seychelles, and across to Borneo, and hence there was a path for the mixture of races. The submergence of the ridge, leaving now only the tops of hills above the water, had isolated the Negro and Malay again.”

Now, assuming the above to be a tolerably accurate outline of the bent of his argument and without disputing the geological accuracy of the statement, it appears to me both unwise and superfluous to imagine any communication between the races of Africa and Polynesia by this route when good evidence exists

* From his “*Die Melan Spr.*” Leipzig, 1860, quoted in Brace’s “*Races of the Old World*,” Murray, 1863.

† Delivered at the College for Men and Women, Bloomsbury, on Friday, October 19th, 1877 and reported in *The Times*, October 26th, 1877.

that communication has been equally possible since the continents assumed their present shape. Let me try to trace the links between Africa and Oceania. A dark Negritto race exists, we know, at the present day, in the Andaman Islands, and perhaps in the interior of the Nicobars, close to the mainland of Asia. Other black races exist still in the Indo-Chinese Peninsula. Excluding the disputed case of the wild Semangs,* who inhabit the mountain fastnesses of the Malayan Peninsula near Malacca, and whom some claim as a wild *brown* tribe (perhaps the original stock of the Malays), there are the Moys on the mountains between Cochin China and Laos, and Cambodia. It is a pity that no modern traveller appears to have visited them. They were undoubtedly the aborigines of Cochin China and were only driven into the mountains by the Kings of Tonquin in the 15th century. They are said to be woolly-haired, very black and savage, and with faces resembling Kaffirs (of Africa?).† Mr. Earl, in his well-known work on *The Papuans*, says that the first European traveller who fixed on them a Papuan character was Mr. Charles Chapman, who was an officer in the East India Company's service sent to Cochin China on a mission in 1778. He reported thus of them to his Government:—"The Aborigines of Cochin China are called Moys, and are the people which inhabit the chain of mountains which separate it from Cambodia. To these strongholds they were driven when the present possessors invaded the country. They are a savage race of people, very black, and resemble in their features the Caffrees."

A tribe called "Mai," which may be the same people, is also mentioned in an Essay on the Indo-Chinese countries in *Moor's Notices of the Indian Archipelago*, and which has been attributed to Mr. Craufurd, the historian of the Indian Archipelago, in the following terms:—

"The most numerous inhabitants of this province are the proper Kambodians. The Anam race are the masters. The original inhabitants of that portion of it lying to the eastward of the great river and bordering on Lao, are a tribe called Mai."‡

Mr. Earl adds:—"I have entered into this subject more fully than I should otherwise have done, with a view of suggesting to those interested in the archaeological branch of ethnography, the importance of the results that may attend a closer inquiry into the characteristics of this primitive race. It is well known that

* I have no doubt myself of the Papuan origin of this race. See descriptions in Earl's "Papuans" chap. IX; Science Gossip for 1866, Hardwicke and Bogue, pp. 239—261, &c.

† See Tomlin's "Geography," p. 510, London, 1841, and Earl's "Papuans," pp. 158—60.

‡ P. 192.

many of the ancient idols of the Hindus have Negro characteristics, and the great Budha himself, who is also sometimes represented as a negro, is said by his worshippers to have been born of a female named 'Maia.' The traditions of the Chinese respecting the earlier inhabitants of their country, and the high veneration in which even those who are untainted with Buddhism hold the Waringin, the Banyan-tree of the Far East, are also interesting subjects of inquiry."

On p. 116 of his work he explains his latter allusion to refer to the wilder Papuans delighting to dwell high up among the branches of this tree, and to the superstitious reverence with which all the aboriginal tribes of the Archipelago, as well as those of the northern coasts of Australia, and the lower classes, at least, of the Chinese regard it. The Papuan custom of making a home in trees or upon elevated platforms still prevails in Cambodia, I observe from perusing the accounts of recent travels in that country.*

The Papuan and Negritto races are not at present traceable in India, although they are mentioned in the sacred books of the Hindus as living far to the south-east.† Some of the ancient geographers, however, mention cannibal dwarfs (Negrittos?), as dwelling on the Ganges in their time.

Dr. Pritchard cites two instances in which a strong resemblance to negro peculiarities came under his notice in India—one amongst the Brinjarry tribe—and in connection with this fact refers to the reported existence of a tribe of blacks in the vicinity of Lake Zurrah in Central Persia, and also to the description by Herodotus of the Asiatic Ethiopians.‡ It was his opinion, "that the Negritto race once occupied more space than it does at this time, and that in many cases it has preceded the dissemination of other races," (p. 180).

They certainly appear to have played a more prominent part in the East in bygone times than they do now, for Mahometan travellers,§ in the age immediately succeeding Mahomet, speak of the Andaman Islanders as cannibals infesting the Straits of Malacca, and as having been expelled to their present home by force; while Valentyn, an old Dutch historian of the East, describes the Papuans of Ceram, in the early part of the last century, as being cannibals, and organising extensive fleets to plunder the adjoining coasts.|| It is needless to say that in the present day no Papuan or Negritto tribe (except perhaps in Papua) is aggressive.

* See Mouhot's "Cambodia," p. 238.

† See Pickering's "Races of Men," p. 174.

‡ Ibid., pp. 145-6.

§ See translation by Eusebius Renaudot, Earl's "Papuans," p. 169.

|| Earl's "Papuans," pp. 114-5.

Ferguson, in his *History of Architecture*, calls attention to the curious fact that opposite to the cave-temples of Western India, we find the *trogloodytes* of Eastern Africa. He inclines, however, to consider this an accidental coincidence arising from geological causes.

The presence of black races (nearly identical with the Negro races of Africa) in Western Asia and almost in close proximity to the African Continent, within the historical period, is, if it can be duly substantiated, a most interesting and suggestive fact.

All classical students know that the ancients uniformly divided the Ethiopians (whose very name *αἰθίοψ*, black, indicated their colour) into the Eastern and Western Ethiopians, and that this distinction was kept up until very recent times. It has been frequently supposed that this arose from a mere confusion in the ideas of the old geographers and from scanty information; but it is difficult to understand how so exact an authority as Herodotus could be so grossly deceived as to races existing near to him, and the more so as his own travels were apparently very extensive.

Most of the races of mankind were evidently well known to him, and if he had heard of the Akkha dwarfs of Schweinfurth and of the Samoyedes of Siberia, is it likely he did not know the difference between the Eastern and Western Ethiopians when he spoke of them? * It is to be observed that they cannot be the Arabs, Indians, or Egyptians, for he carefully distinguishes the Ethiopians from these. Yet he speaks of Ethiopians serving with the Indians in the Persian armies, and appears to consider them the aboriginal population of a part of Western Asia. The true view to take of all this evidence appears to me to be to assume that *Herodotus was correct*. Why should we not believe that there were two races of Ethiopians, just as there were two Cushes, two Arabias, and two Ethiopias, † and that in his time, a Negroid race of Asiatics, totally distinct from the Negro Africans, was dwelling in Mesopotamia or thereabouts?

* The Ethiopians from the Sun-rise (for two kinds served in the expedition) were marshalled with the Indians, and did not at all differ from the others in appearance, but only in their language and their hair. For the Eastern Ethiopians are straight-haired; but those of Libya have hair more curly than that of any other people. These Ethiopians from Asia were accounted almost the same as the Indians; but they wore on their heads skins of horses' heads, as masks, stripped off with the ears and mane; and the mane served instead of a crest, and the horses' ears were fixed erect; and as defensive armour they used the skins of cranes instead of shields." (Polymnia, Book III. Section 70. Cary's translation.)

† See Genesis ii. 13, where a river running from Eden is said to encompass the whole land of Ethiopia or Cush.

It is to be observed that Herodotus says that the difference between the two races consisted in the language and *the hair*. Now one great difference between the Papuans and African negroes consists also in the hair, for while both have *frizzled or woolly* hair, the hair of the Papuans does not spread over the surface of the head like that of the African negroes, but grows in small tufts or knobs, each of which keeps separate from the rest, and the hairs, if allowed to grow, twist round each other, and form spiral ringlets.* This produces much the same effect as is observable in the hair represented on the Assyrian sculptures, and a very close approximation to the same peculiarity is to be seen on some of the figures sculptured upon the walls of Palenque in Central America. Herrera (quoted by Stephens in his work, p. 533,) says that the Indians of Yucatan (Mayas?) wore their hair in tresses of spiral curls at the time of the Conquest. May this not suggest that the Papuan race was more closely connected with the early civilized Turanian races than we usually imagine? But Herodotus seems to say that the Asiatic Ethiopians had *smooth* hair. If this was the case, it merely indicated a very slight admixture of foreign blood, for Mr. Earl tells us (p. 3) that "a comparatively slight mixture with the brown race removes the peculiarity, at least has done so in all cases that have come under the writer's observation. The hair of people of the mixed race, although thick and curly, covers the surface like that of Europeans." This fact may explain how it is that the prevailing character of the hair amongst the aborigines of Australia is straight or only slightly waved, and often fine and silky, (even at Cape York) although frizzled hair is also very prevalent on the north and north-east coasts.† Dr. Pickering also noticed that the hair was straight amongst the Brinjarry tribe in Western Hindostan whom he had suspected (from the Negroid features of some individuals) of inheriting Papuan blood.‡

Another interesting fact tending to prove the existence of aboriginal black races in Western Asia, is the legend of the Asiatic Memnon. This legendary chieftain is spoken of by Homer in the *Iliad* as an Ethiopian King, a son of Aurora, who came to the assistance of the Trojans, and during the war was killed by Achilles, who wished to avenge the death of Antilochus. This prince has been too readily assumed to be an African because he was an Ethiopian, but Homer nowhere says that he came from Africa, and the conjecture is in itself wildly improbable. The classical writers of antiquity first led to his

* See Earl's "Papuans," pp. 1-2.

† Earl's "Papuans," p. 189.

‡ Pickering's "Races of Men," p. 146.

being referred to Africa, by connecting him with the Memnon of Thebes and the mysterious musical statue of that ilk. But this name can be distinctly traced to a stupid Roman blunder of the time of Adrian, which transformed an Egyptian statue of Amenoph III of the 18th Dynasty, and the tombs of Amenoph and Mëiamoun, into the statue of *Memnon* and the *Memnonium* by a whimsical play upon words or rather sounds.*

Surely, if his being the son of Aurora means anything, Memnon must be derived from the *East* and not from the *South*! Moreover he was uncle to Priam, and how Priam could be related to a prince in Africa it seems difficult to imagine. If he were an *Asiatic* prince, located somewhere near Susa, in the old Scriptural Cush or Ethiopia, then we could understand his relationship to a prince of the Troad, and his advent, with 2,000 dusky warriors to help his relative against the Occidentals. Moreover, M. De Quatrefages and Dr. Hamy, affirm that negroid tribes *still exist* between the Tigris and Euphrates, and if this be the case, we see at once the existence of Asiatic Ethiopians clearly demonstrated.†

Dr. Pickering points out some remarkable coincidences between Fijian and Eastern African customs, such as the use of the neck-pillow, circumcision, similar modes of dressing the hair, even to the staining of it to a flaxen hue,‡ and they may thus be logically accounted for, without recourse to Professor Seeley's somewhat far-fetched hypothesis.

The only other mention of Papuan or Negritto races in Asia, of which I am aware, is the statement of Herodotus that the inhabitants of Colchis, near the Black Sea, resembled Egyptians by their dark colour and frizzled hair. Very possibly in that congeries of disintegrated races—that ethnological ark—the Caucasus, some remnants of the primitive Papuan aborigines of Asia may long have lingered.§

* See an essay upon "La Statue Vocale de Memnon," in "Aquarelles Africaines," by Émile Guimet. Paris, J. Hetzel & Co.

† See "Crania Ethnica," and "Revue d'Anthropologie," published in Paris.

‡ "Races of Men," p. 174.

§ "For the Colchians were evidently Egyptians, and I say this having myself observed it before I heard it from others; and as it was a matter of interest to me I inquired of both people, and the Colchians had more recollection of the Egyptians than the Egyptians of the Colchians; yet the Egyptians said they thought the Colchians were descended from the Army of Sesostris; and I formed my conjecture, not only because they are swarthy and curly-headed, for this amounts to nothing, because others are so likewise, but chiefly from the following circumstances: because the Colchians, Egyptians, and Ethiopians, are the only nation of the world who, from the first, have practised circumcision," &c., (Euterpe, Book II, Section 104, Cary's translation.) . . . "I will now mention another fact respecting the Colchians, how they resemble the Egyptians. They alone and the Egyptians manufacture linen in the same manner; and the whole way of living, and the language, are similar in both nations," &c. (Ibid., Sec. 115.)

Quitting the consideration of the extreme westward extension of the Papuan and Negritto races, we will now take a view of the extension of these races in the direction of America.

In the first place, although the fact seems to be little known, there exist plain proofs in the traditions of the Maories or Malay Polynesian inhabitants of New Zealand that these islands once lay within the Papuan area, and that the real aborigines were exterminated, within comparatively recent times, by the ancestors of the present New Zealanders.

The veteran missionary, the Rev. Mr. Taylor, tells us* that the native records of the Maori arrival by sea distinctly bear witness that the immigrants fought with, and overcame "the men of the island" a black race whom they nicknamed by a native term meaning "Naked sides," because they wore so little clothing, and also denominated "*Black Fellows*." It would be well if osteologists and comparative anatomists would carefully examine all human bones found in the islands, with a view to ascertaining whether two types of skull are discoverable in the old burial places, and if either of these resembles the Papuan or Negritto types.

Meanwhile, there is little doubt that in the isolated and apparently Negritto race found in the Chatham Islands, about 400 miles due east of the Canterbury Settlement in the Middle Island, we have a precisely similar race to the former black inhabitants of New Zealand. These islands were only discovered in 1791, yet the aggressive tendency of the Malay Polynesians is shown by the fact that a Maori tribe somewhere about 1820, chartered a European vessel, and speedily effected a conquest of the islands.† Now, missions from Germany and New Zealand work there, and it would be interesting to receive fuller accounts of the aboriginal race. They appear to be very degraded, and their canoes are merely wicker-work, tied together by cordage of indigenous flax, there being no timber in the islands.

It is a tempting subject for speculation, whether the Papuans ever succeeded in reaching America from their Polynesian and Melanesian homes. Although traditions, I believe, exist in some of the islands of Eastern Polynesia as to the former existence of black tribes there, no Papuans or Negritos are at present found far to the eastward of the Fiji Islands, and of Chatham Island.

The tendency indeed appears to have been for a long time to restrict the Papuan area, since, when we took over the sovereignty of Fiji, the wily Malay Polynesian Tongan chief Maafu, the

* In his work on "New Zealand and its Inhabitants."

† See article "Chatham Islands" in "Penny Cyclopædia."

representative of a Tongan colony settled in Fiji by King George of the Friendly Islands, had very nearly succeeded by judiciously interfering in the native quarrels in supplanting the Papuan Thakombau in the suzerainty of Fiji.

Williams, the missionary, observes that "the latter [Malays] being a fierce and treacherous people succeeded in extirpating them [the Papuans] from the smaller islands and groups,"* and Earl adds that although certainly not inferior in mental capacity to the brown tribes, "their impatience of control while in an independent state utterly precludes that organization which would enable them [the Papuans] to stand their ground against encroachment; and they invariably fall under the influence of the Malaysians whenever the two races are brought into contact."†

This curious mental deficiency seems to prove that the Papuans are the original race and the Malays the interlopers, a theory which the fact of the Malay traditions always recording an arrival by sea, appears to confirm.

At the same time, it is by no means impossible that at some remote epoch, before the advent of the Malay-Polynesians, the Papuans and Negrittos were the great colonizing race in this part of the world;‡ for the Fijian canoes were superior to those of all the other races, and were good sea-going boats,§ and even the barbarous Andamaners or Mincopies have good outriggered canoes.

It seems, therefore, not unlikely that in remote ages small parties of Papuans may have succeeded in reaching America. Dr. Pickering thinks that stories of black aborigines in America may be all referred to successive arrivals of Malay Polynesians;|| but Papuans would surely answer more closely to the appellation *black*?

Sir Arthur Helps tells us, in his "History of Spanish Conquest in America" that the Spaniards, when they first visited Darien under Vasco Nuñez, found there a race of black men, whom they (gratuitously, as it seems to me) supposed to be descended from a cargo of shipwrecked negroes; this race was living distinct from the other races and at enmity with them.¶ Some of these blacks built for themselves houses in trees, just as the Papuans often do.** These people allied themselves with the

* See "Missionary Enterprises," p. 513.

† See "The Papuans," p. 6.

‡ "Races of Men," p. 115. (See also the map in front.)

§ According to Mr. Pritchard, late Consul there: Dr. Pickering thinks differently.

|| See Mr. W. L. Ranken's Paper on the "South Sea Islanders," Journ. Anthropol. Vol. VI, p. 223.

¶ See Vol. I, p. 360.

** Ibid., Vol. I, p. 421.

Spaniards in their contests with the Indians. It is a great pity that no further details or words of their language have been preserved, for I have little doubt that we have here a trace of a primitive Papuan colony in America. The slave trade with Africa had hardly commenced by this time, and the supposition that they were African negroes seems very unfounded.

Perhaps other black tribes may be discovered upon a more careful inquiry, and, if the theory of Crawford be accepted, which represents the inhabitants of Polynesia in ante-historic times as being a great semi-civilized nation who had made some progress in agriculture and understood the use of gold and iron, were clothed "with a fabric made of the fibrous bark of plants, which they wove in the loom," and had several domesticated animals, a new and unexpected light may possibly be thrown upon the origin of primitive American culture. It is certain that massive ruins and remains of pyramidal structures and terraced buildings closely analogous to those of India, Java, and Cambodia, as well as to those of Central America, Mexico, and Peru, exist in many islands of Polynesia, such as the Ladrone Islands, Tahiti, Fiji, Easter Island, and the Sandwich Islands, and the customs of the Polynesians are almost all of them found to exist also amongst the American races.

Wallace says repeatedly that the Papuan has a higher intellectual capacity and "feeling for art" than the Malay,* and Dr. Pickering calls the "Fijians a far more ingenious people than the (Malay) Polynesians."†

Earl says that "the Papuans are beyond all comparison superior in vigour, both mental and physical, to those tribes of the brown race with whom they are brought in contact."‡

Perhaps here, then, we have "the missing link" between the Old World civilizations and the mysterious civilizations of America. At any rate, I hope that you will pardon me for having called attention to certain facts in connection with the distribution of the Papuan race which I thought in danger of being overlooked. The black races of Asia, Polynesia, and America are evidently worthy of particular study.

DISCUSSION.

MR. HYDE CLARKE said: A distinction must be drawn between the short black Negritto races and the tall blacks or Negroes. A line of dwarfs reached across Africa from the Akkas or Pygmies in the north-east to the Obongo and to the Gulf of Guinea. All these

* See "Malay Archipelago," p. 587.

† See Pickering's "Races of Men," pp. 152-3.

‡ See "Papuans," p. 68.

spoke allied languages. Language was to be required as a proof of association rather than as a test of race. Then there was the curious circumstance that in the Tasmanian languages were traces of the Nyam-Nyam of the African Lake regions. In America there were short dark races north and south, and their languages presented peculiar features. With regard to the connection between India and Africa, he had prepared for the Royal Asiatic Society, a paper showing the connection with Africa of the Bodoxe, of the Naga, and of the Kolarian. It did not appear as if a geological bridge were needed to connect India and Africa. As to what Mr. Allen had said about blacks in Central America, he would call attention to his own paper in the Journal, showing the connection with Africa of the language and mythology of the Bribris of Central America. Also as to the passage in Herodotus about the Colchians, this he had dealt with in the paper on the connection of the Ude language of the Caucasus with the Egyptian and Coptic. This had been confirmed by the discovery on coins at Axum in Ethiopia with names corresponding to those of Caucasian kings. The fact cited from Herodotus by Mr. Allen as to the Eastern Ethiopians, was a valuable suggestion for the history of the early extension of the black races in the North.

Mr. MOGGRIDGE said: I would beg, sir, to return my thanks to the author of the paper we have just heard, the result evidently of much research. On one point, however, I must differ from him; he would consider the Negrittos to be a branch of the Papuans; now there are not only marked differences in language, stature, and frame, but also in the skulls of those two races, which I have recently had an opportunity of comparing.

Colonel GODWIN AUSTEN said: Mr. Allen has referred to the rock-cut temples of the Bombay Presidency. I am of opinion that a connection has long existed between Africa and that part of India. When visiting the Cave of Elephanta, I was particularly struck by the similarity of the sculptures to old Egyptian in the protruding lips and the mode in which the hair is depicted. In making this remark, I do not wish it to be understood that it has any relation to the question of such peoples as the Andamanese having an African origin. They may quite as likely be the remnants of a very early Asiatic race and spread westward.

Mr. ALLEN in reply, stated that he had himself only been able to discover meagre references to the former existences of *black* races in America; but had thought it best in the interests of science to bring these forward, as further research might throw light upon the subject. He could not venture to express an opinion as to whether the Negrittos were simply Papuans living under unfavourable circumstances, or a different and earlier although allied and cognate race. He had the authority of Mr. Earl in his work on *The Papuans* for the former opinion, and also for the assertion that some tribes of Australians in the north and north-east had woolly and frizzled hair (p. 189.) He had not used or placed any credence in recent mythical *Travels in New Guinea*, as a gentleman

had suggested. Much remained yet to be discovered about the Papuans and Negrittos, and he was anxious to stimulate research regarding them.

Major-General Lane Fox, Mr. Bonwick, Mr. Bouverie Pusey, the Rev. Edgell Wyatt Edgell, and the President, offered some remarks.

The Director read a Paper from DR. JULIUS VON. HAAST on "Rock Paintings in New Zealand."

NOTES on some ANCIENT ROCK PAINTINGS in NEW ZEALAND.

By JULIUS VON HAAST, Ph.D., F.R.S., *Director of the Canterbury Museum and Professor of Geology in Canterbury College (New Zealand University), Christchurch.*

THE history of the races inhabiting the Pacific Ocean is so obscure and the theories concerning their migrations are so contradictory that any new discovery which might throw light upon these interesting subjects will doubtless be of considerable value to the scientific world. I have therefore thought that a copy of some remarkable rock-paintings lately discovered in New Zealand, made with the greatest care by Mr. T. S. Cousins on a scale of one inch to the foot, together with my views on the subject, might be acceptable to your Society.

I have no doubt that these rock-paintings when closely examined by archaeologists and linguists will throw some light upon the questions at issue and at least prove that at one time there has been some immigration to New Zealand, either voluntary or accidental, from the north-west and from countries which then possessed a far higher civilization than the Maories ever reached.

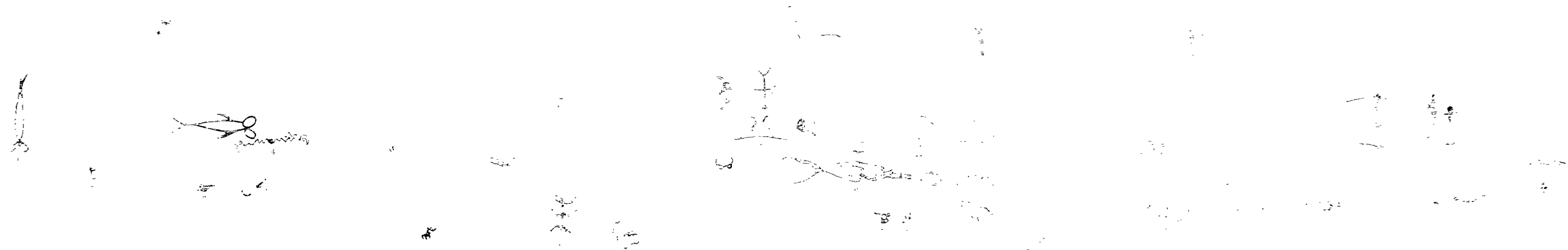
Although I looked carefully over all the traditions of the former history of the New Zealanders there is not the least trace of such immigration being recorded.

About a year ago Mr. Alexander Lean informed me of the existence of these paintings, which are situated on an educational reserve about one mile on the western side of the Weka Pass road, not far from the last rise from which that picturesque road descends into the Waikari Flat. Shortly afterwards I visited them and I need scarcely observe that I was very much struck with their peculiar character and their state of partial preservation, from which their great age could be inferred.

The so-called case which is, however, only a rock shelter, is washed out of a vertical wall of rock lining a small valley for

ANCIENT ROCK PAINTINGS.
WEKA PASS RANGE, NEAR WAIKARU, NEW ZEALAND.

Copied by T. S. GILSON.





about 300 feet on its right or southern side. It has a length of 65 feet and is situated along the western or upper portion of the rock. The valley itself is now perfectly dry, but must in post-pliocene times have had a not inconsiderable volume of water flowing through it.

The rock consists of calcareous sandstone of probably eocene age, and the roof of the shelter is formed by the natural dip of the upper bed having an inclination of about nine degrees to the south.

The rock shelter is, when standing near the foot of the rock below it (which latter has for about five or six feet a backward slope), about eight feet high, rising to about twelve feet at the outer edge.

The average depth is twelve feet, and offering from its aspect a splendid shelter from southerly weather, it forms a most favourable locality for camping.

The two sections which I have the honour to submit to you will make you acquainted with the physical features of the locality.

The whole length of the rock below the shelter has been used for painting, and it is evident that some order has been followed in the arrangement of the subjects and figures. The paintings are done with a bold hand, they are well finished and show clearly that they are the work of an artist of times long gone by who was no novice in his profession.

The paint consists of kokowai (red oxide of iron) of which the present aborigines of New Zealand make still extensive use, and of some fatty substance, such as fish-oil, or perhaps some oily bird-fat. It has been well fixed upon the somewhat porous rock and no amount of rubbing will get it off.

It is evident, however, that the existing paintings which are already partly destroyed by the scaling off of the rock through the influence of frost and other physical agencies causing weathering, are not the first which were delineated on this rock, because in many spots and sometimes below the paintings under consideration faint traces of still older ones are visible. These were also painted in red, but I was not able to distinguish any outlines.

Thus we have another proof, if it were needed, of the vast period of time* during which New Zealand has been inhabited by man.

As before observed the principal paintings are all in red, belonging all to one period, but round and above them appears

* In using this expression I wish not to do so in the sense it is used in the Northern Hemisphere, but only in reference to the short space of time of which we have reliable traditional evidence in New Zealand.

a mass of others in black, of which some of the best and clearest have also been copied by Mr. Cousins. They are of a more primitive nature and seem to have been done by a different race of men.

That they are not contemporaneous with the red ones could easily be ascertained by observing that they pass not only indiscriminately over them but that many of them were only painted after the rock had already scaled off under the red ones, so that they are sometimes painted upon the newly-exposed fresh surface. They are all most probably painted with charcoal mixed with some oily animal substance, and are also well fixed upon the rock, but they are generally not so well defined, and moreover cross each other continually, so that it is very difficult to distinguish many of them clearly.

Mr. Cousins has therefore only copied a few of the figures which were the most conspicuous and well defined, mostly situate near and on the roof of the rock shelter.

Before giving a description of these paintings I wish to refer to the native traditions about them, as this will give us perhaps a clue to their origin. It has generally been supposed that such paintings were the work of the Ngatimamoe (*see* Vol. I, "Transactions New Zealand Institute," page 18, where several paintings, but of a somewhat different character, are figured), but the Rev. James W. Stack informs me that even a greater age is assigned to them. From a conversation which that gentleman had with Matiaha Tira Morehu, the Maori chief of Moeraki, and the best living authority on Maori traditions in the South Island, it appears that these paintings are attributed to the Ngapuhi, the oldest inhabitants of this Island, of which there are any traditions. In fact the Ngapuhi are a somewhat mythical people, to whom, besides these drawings, the destruction of the moa, or anything the origin of which is unknown, is always attributed. I may here observe that Matiaha is one of the authorities for the statement that the moa has been extinct in very ancient times and that there that is a total absence of reliable traditions about them amongst the Maoris, which tallies perfectly with the geological evidence lately brought forward. Besides the extinction of the moa, and the red paintings, Matiaha also attributed to them the heaps of oipi shells (*Mesodesma novæ zealandicæ*) which are found far back in the mountain ranges, and which were carried to such a distance by this people, who, according to the aged Maori chief, were great travellers. I have much pleasure in adding in Appendix No. 1 a fuller account of their ancient traditions from the pen of Mr. Stack.

In my papers on the Summer Cave ("Transactions of the New Zealand Institute," Vol. VII) I have alluded to that question more fully.

It has been ascertained that there are several caves and rock shelters in this island, in which paintings of similar character are preserved on the walls, of which, as before observed, those of the Takiroa rock shelter near the Waitaki were published in Vol. I, page 18 of the "Transactions New Zealand Institute," but none of the paintings are like those from the Weka Pass, except perhaps the sparks rising from the figure in the right-hand corner. Moreover one of the drawings is a scroll-work, and thus approaches the designs of the Maoris of the past few centuries. There are others at the Opihi, at the Levels, Tengawai, and at Pareora, and, as I have just been informed, in some other places in the Weka Pass ranges, and doubtless in many other localities.

It would be of the highest interest to have these carefully copied, as no doubt they will throw considerable light upon the history of the ancient inhabitants of this island.

My friend, the Rev. James W. Stack, has given me a copy of a drawing from a rock shelter near the Opihi river, painted in black, which differs considerably from the Weka Pass paintings, and, as it appears to me, approaches more the designs of the Maoris. I add the same, with Mr. Stack's note as Appendix 2.

In examining the paintings under review, it is evident at a first glance that they are quite distinct from those of the Maoris, which always consist of curved lines and scroll-work, although in former days the traveller would occasionally see on posts or smooth rocks rude representations of men, ships, canoes, and animals, drawn by Maori children, but they were always of an ephemeral character, Maori artists confining themselves to the drawing of scrolls, and then always in permanent colours.

In looking at the *ensemble* of these rock-paintings, it is clear that there is some method in the arrangement which at once strikes the eye as remarkable. Some of the principal objects evidently belong to the animal kingdom and represent animals which either do not occur in New Zealand, or are only of a mythical and fabulous character. Some of them can easily be recognized; the meaning of others can only be conjectured.

The group in the centre is of a different character, which is difficult to explain, unless we assume that it represents implements and portions of dress of a semi-civilised people. Only two representations of man can be recognized, but they are full of movement and evidently in the act of running away, whilst the figure of the bird is very suggestive.

Below these principal groups we find several smaller figures or signs, the meaning of which for a long time considerably

puzzled me. I was inclined to believe that they might be a kind of hieroglyphic writing, but unfortunately there were too few of them we thought worth copying, the greater portion having much faded or broken away.

Some of those which were too faint, occurred at 9, 30, and 46 feet from the left-hand side. They were sometimes close to the floor of the rock shelter, but did not go below it; which is of some importance to prove that the kitchen middens which had here accumulated, were either forming, or had already been formed when the paintings were executed.

The thought struck me at last, that these smaller figures resemble the letters of some Oriental languages, and that I had seen somewhat similar characters published in our "Transactions."

The Tamil inscription round the antique bronze bell, now in the possession of the Rev. W. Colenso, in Napier, at once suggested itself to me, and in comparing the peculiar figures with the writing on that bell as given in Mr. J. T. Thomson's interesting paper, in the "Transactions of the New Zealand Institute,"* I was at once struck by the marked resemblance between them.

It would be a most curious coincidence, and difficult to imagine, that the ancient inhabitants of this island should adopt similar figures, and place them as it were, below the representations of animals, some of foreign countries or scenes of life without any meaning; or should we assume, as the bell with the Tamil inscription was found in New Zealand, so other objects were secured from the same or another similar wreck amongst which pictures of animals and adventures of human life with writing below them, were obtained, and which afterwards were copied after a fashion by the autochthones of New Zealand? or might I even suggest that one or more of the wrecked mariners of Indian origin were saved, and that they accompanied as slaves, the ancient inhabitants of this island on their journeys, during which these paintings were executed by them.

These ancient works of primitive art, as of considerable historical value, are therefore invested with still greater interest, and I have no doubt that further research will make us acquainted with more of these remarkable relics of the past.

I may here observe that as far back as 1862 I met with paintings of similar character and in a splendid state of preservation during my geological surveys in the south, but which I then passed over, imagining that they were probably the work of some shepherd, who had devoted his leisure hours to the execution of these strange figures and characters with the red

* *Ethnographical Considerations on the Whence of the Maori*, by J. T. Thomson, F.R.G.S., *Trans. N.Z. Institute* iv, 23.

paint with which sheep are usually branded. I was then, to speak in Colonial language, comparatively a new chum, but I may console myself with the fact that many of our intelligent settlers have looked at them quite in the same light. However I shall not fail to collect all the material as soon as I can find the time.

As before observed, the paintings under review occur over a face of about 65 feet, and the upper end of some reaches 8 feet above the floor; the average height however, being 4 to 5 feet. They are all of considerable size, most of them measuring several feet and one of them even having a length of 15 feet.

Beginning at the eastern end, we find in the left-hand corner the representation (No. 1) of what might be taken for a sperm whale with its mouth wide open, diving downwards. This figure is 3 feet long. Five feet from it is another figure (No. 3) which might also represent a whale or some fabulous two-headed marine monster. This painting is 3 feet 4 inches long. Below it, a little to the left in No. 4, we have the representation of a large snake possessing a swollen head and a long protruding tongue. This figure is nearly 3 feet long, and shows numerous windings.

It is difficult to conceive how the natives in a country without snakes could not only have traditions about them, but actually be able to picture them, unless they had received amongst them immigrants from tropical countries who had landed on the coasts of New Zealand from some cause or another.

Already, on the second visit of Captain Cook, Tawaihura, a native chief of Queen Charlotte Sound, gave an account of enormous snakes and lizards to him, and drew a representation of both animals so distinctly that they could not be mistaken, but hitherto the researches of naturalists for so many years have failed to reveal their existence in these islands.

Between the two fishes or whales we have No. 2, which might represent a fish-hook, and below the snake No. 5, a sword with a curved blade, whilst No. 5 in the same line is one of those remarkable signs or letters.

Advancing towards the right, we reach a group which is of special interest to us, the figure No. 9, which is nearly a foot long, having all the appearance of a long-necked bird carrying the head as the cassowary and emu do, and as the moa has done. If this figure does not represent a moa, it might be a reminiscence by tradition of the cassowary. The figure is unfortunately not complete, as only the portion of one leg has been preserved. The forked tail is however unnatural, and if this design should represent the moa, I might suggest that it was either a conventional way of drawing that bird or that it was already extinct

when this representation was painted according to tradition; in which latter case No. 11 might represent the taniwha or gigantic fabulous lizard which is said to have watched the moa. No. 8, is doubtless a quadruped, probably a dog, which as my researches have shown, was a contemporary of the moa, and was used also as food by the moa hunters. No. 10 is evidently a weapon, probably an adze or tomahawk and might, being close to the supposed bird, indicate the manner in which the latter was killed during the chase. The post with the two branches near the top (No. 12), finds a counterpart in the remnant of a similar figure not numbered, between the figures No. 3 and 9. They might represent some of the means by which the moa was caught or indicate that it existed in open country between the forest. No. 13, under which the rock in the central portion has scaled off, is, like No. 6, one of the designs which resembles ancient Oriental writing.

Approaching the middle portion of the wall, we find here a well-arranged group of paintings, the centre of which has all the appearance of a hat ornamented on the crown. The rim of this broad-brimmed relique measures 2 feet across. The expert of ancient customs and habits of the Malayan and South Indian countries might perhaps be able to throw some light upon this and the surrounding figures No. 15 and 18, to which I can offer no probable suggestion.

From No. 17, which is altogether 3 feet high, evidently issues fire or smoke; it therefore might represent a tree on fire, a lamp or an altar with incense offering. If we compare this peculiar appearance with one of the figures on the copy of the Takirva cave paintings we find that it has the same characteristic feature. The figure No. 15, is particularly well painted, and the outlines are clearly defined, but I can make no suggestion as to its meaning. In No. 19, we have doubtless the picture of a human being who is running away from No. 17, the object from the top of which issues fire or smoke, and I need scarcely point out to you that this small figure is full of life, and that it is entirely different from the conventional representation of the human figure in the paintings and carvings of the Maoris.

I am strengthened in my conviction that it is meant for a man, by observing a similar figure running away from the monster, No. 27. No. 16, which has been placed below that group, might be compared to a pair of spectacles, but is probably a letter or an imitation of such a sign.

A little more to the right, a figure, 6 feet long, is very prominent. It is probably the representation of a right whale in the act of spouting. Above it, in No. 22, the figure of a mantis is easily recognisable, whilst Nos. 21 and 21A below the sup-

posed right whale are again cyphers or letters resembling those of the ancient Tamil inscription. Nos. 23 and 25, although in many respects different, belong doubtless to the same group, and represent large lizards or crocodiles; between them the now empty space of a width of 5 feet 6 inches was evidently also painted over, of which the paint marks on the partially scaled-off face of the rock can be distinguished. The left-hand figure is 4 feet long; it is unfortunately deficient in its lower portion, but it is still sufficiently preserved to show that besides four legs it possesses two other lower appendages, of which one is forked and the other has the appearance of a trident. I wish also to draw attention to the unusual form of the head. No. 25 is a similar animal, 3 feet long, but it has eight legs, and head and tail are well defined. The head is well rounded off and both animals represent without doubt, some fabulous animal, such as the taniwha, which is generally described as a huge crocodile, of which the ancient legends give so many accounts.

No. 27, a huge snake-like animal, 15 feet long, is probably a representation of the Tuna tuoro, a mythical monster, of which Mr. Stack gives such an interesting account in his notes kindly furnished to me, which I have added as Appendix No. 3.

It is evident that the Tuna tuoro is in the act of swallowing a man, No. 29, who tries to save himself by running away from it.

Now if we admit that the characters below the figures denote an Indian origin, the deduction would not be too hazardous that the accounts of huge snakes and crocodiles were brought by the writers of these signs to New Zealand, or if only pictures or books were obtained from a wreck, the ancient inhabitants of these islands founded their legends of such monsters upon them. Thus 23 and 25 might be crocodiles; No. 27 a boa-constrictor. The figure 26 above the large monster may represent like 8 a quadruped, probably a dog, and finally No. 28 is a good picture of a seal or dog-fish. The paintings in black are altogether of another style and have been done in a far more recent period, when the aborigines were less skilled. But although these designs are all very juvenile, if we except perhaps the animals which can be easily recognised, they have been painted at various times, because in many places the rock surface below them has scaled off and new ones pass over the thus exposed face. The whole interior of the rock shelter being covered with these paintings, passing first indiscriminately over the red ones as well as over each other, it was found impossible to make copies of the greatest portion of them. Moreover, they nearly all represent the human form, and we selected a few of the most characteristic ones, which will be sufficient to show their peculiar features.

In the left-hand corner, close to a large shark-like animal,

which, however, was too much effaced to be properly copied, were two groups of animals in a sitting position, probably dogs, of which I had the best preserved one copied. They evidently are tearing something eatable between them.

In the centre of the wall is a figure which might be taken for a *Mantis*, whilst close to it the figure of a seal is unmistakable.

The rest, with the exception of a three-pronged (eel ?) fork, represents the human figure, of which one has a stick in his hand.

When the hands and feet are represented, the former have generally four fingers and the latter five toes. One of these figures has two calabashes hanging from his thigh. It is most remarkable that none of these paintings are indecent, which is so characteristic of all Maori carvings and paintings of the human figure. These black paintings, although of such rude conception, are, without doubt, the work of full-grown men, as many of them are 8 feet above the floor of the cave.

The surface of the floor under this rock shelter showed on both sides a gentle undulation, separated towards the centre by about 10 feet of lower ground, and which, as I had occasion to observe, stands under water during heavy rains, quite a streamlet running in from the higher ground to the west.

At first sight the nature of the ground indicated that it had doubtless been accumulating during human occupancy. To test the ground, a trench was first dug from the centre of the cave, beginning at the wall and continuing the same for about 30 feet and at right angles with it.

Afterwards four more trenches were excavated on both sides of the first, running out for about 16 feet from the interior. This done the ground between these trenches and along the face of the wall was thoroughly searched. These excavations proved that kitchen middens of three distinct epochs existed below the rock shelter, having their greatest depth of 1 foot 2 inches close to the wall, and gradually thinning out, so that 10 feet from the wall they had entirely disappeared, and the bed, No. 3, of the annexed sections, consisting of vegetable mould mixed with small, mostly angular pieces of rock, overlapped them, taking their place. This latter deposit is about 1 foot thick.

Below both the kitchen middens and the somewhat contemporaneous deposit outside the cave, lies a layer of decomposed rock, a gritty bed enclosing a number of angular pieces of rock, the whole derived from the calcareous sandstone by which the valley is bounded. In this deposit the excavations were carried on to a depth of 2 feet, without showing the least sign that it had either been disturbed, or that traces of animal or human life had been entombed in it during its formation. The principal

deposits accumulated under the rock-shelter may, *faute de mieux*, best be described as a dirt bed, which doubtless owes its formation to the occasional presence of an autochthone race in the locality whose scanty kitchen middens give us a glance into the wandering life of its members. However what appeared to me astonishing was the scarcity of the remnants of their food, the whole thickness of the bed (more than a foot) consisting of ashes and refuse too minute to be recognised.

The largest bed on the eastern side was about 25 feet long by 10 feet broad; amongst it, only a few objects were found. Amongst these some few pieces of moa bones were the most interesting, but they showed convincingly that they were portions of remnants of a meal, all the leg bones having been broken for the extraction of the marrow and resembling in every respect the fragments collected in the moa bone point cave and at the Rakaia encampment. These fragments, as far as I could recognise them, belonged to the two *meionornis* species, birds of the size of the emu and cassowary.

Besides these bones, the presence of which proves occupation of the moa hunters during their expeditions, and by which my suggestion that No. 9 may represent a moa, gains, in probability, there were a number of bones of smaller birds amongst the kitchen middens of which those of the kiwi (*Apteryx owenii*) were the most prominent. Other remains belonging to the animal kingdom, and showing that the moa hunters had come from the sea-coast, were a few marine shells, mostly *Mesodesma novæ zealandiæ*, the pipi of the Maoris.

The presence of phalanges of a large fur seal, probably *Arctocephalus cinereus*, so far inland in such locality was rather surprising, unless we assume that they perhaps were used for playing some game. Besides these, there were a few small pieces of wood, probably firesticks, some fragments of chert and flint, either cores or chips, several pieces of dark sandstone, of which one is a fragment of a polished stone implement. Another large piece of calcareous sandstone had evidently been chipped to a point. In the other, somewhat smaller heaps on the western side, which have a length of about 16 feet, with a greatest breadth of 8 feet, also some few fragments of broken moa leg bones were obtained, but too small for recognition of the species. There were also some phalanges of the fur seal, a number of bones of small birds, and several marine shells, some of them fragmentary, belonging to *Mesodesma novæ zealandiæ*, *Maetra discors* and *Mytilus smaragdinus*, the New Zealand mussel. Flakes of chert and flint were as usual present, as well as some fragments of a polished stone implement. There were also two large subangular boulders of sandstone, doubtless brought up from the river bed of the Waikari.

Principally towards the centre of the rock shelter, and where the older deposits were thinnest, occurred above them accumulations of Maori and European origin. Amongst them are in the collection made several pieces of *Haliotis iris*, the pawa shell of the Maoris, which had evidently been worked, but the presence of numerous pieces of Newcastle coal, of ribs and other portions of the sheep, and the iron tip of a man's boot, told clearly its tale. This bed, about 6 inches thick, and about 8 feet long and 4 feet wide, was resting on both sides on the older deposits with broken moa bones. It is in this spot where the water during heavy rain, as experienced by Mr. Cousins and myself, is flowing against the wall of the rock shelter, and it therefore stands to reason that these remnants of European occupancy would easily be trampled into the ground and thus reach a deeper position than they otherwise naturally would have possessed.

No remains of red or black paint or of a receptacle for the paint, were amongst the kitchen middens. These excavations revealed another important fact: namely, that the small drawings which were close to the floor of the rock shelter and often reached to it, but were too faint to be copied, never went below it.

It perhaps would not be too rash to surmise that the people who formed the kitchen middens made the paintings during their visits, lying on the ground when the lower ones were executed; on the other hand they could just reach the top of the shelter when they stood upright to finish the larger figures previously described.

I must confess I was rather disappointed not to receive a larger quantity of objects from the kitchen middens and of more interest. We must therefore conclude that the rock shelter was only seldom visited by man and then was only inhabited for a very short time.

Since the above was written, I had the great advantage of consulting the Rev. Robert Pargiter, who for many years has been living in Ceylon, and who is thoroughly conversant with the Tamil and some other Oriental languages, and although that gentleman was not able to pronounce the figures in question to have the exact form of any single Tamil character, he thinks that there is some resemblance between No. 6 of Waikarie rock paintings and the sixth character T.H.E. of the inscription upon the ancient Tamil bell, and of No. 21A, with the tenth letter K.U. of the same inscription, counting both from the left. Mr. Pargiter makes however, another important suggestion that the inscriptions No. 6, 21, and 21A, may be the signatures of the artist, as according to his experience, the Tamil natives have a

peculiar way of combining two or more letters in one character which is very difficult to decipher, except by the writer himself and those best acquainted with him. Thus, for instance, in their signatures the natives combine generally the initials of their names, and in this case, No. 21A for instance, might be taken for M and S combined, being in fact a monogram. Mr. Pargiter also informs me that No. 21 has some resemblance to a Cingalese character, which are generally formed by the combination of circles.

I may finally observe that besides the remarkable portion of the bronze bell with an ancient Tamil inscription, other objects in silver and glass have been found, but the finders were afraid to bring their account forward, owing to the ridicule to which they universally exposed themselves. However, after carefully collecting the evidence on the subject, I shall not fail to lay the results before you, accompanied by careful drawings of the specimens themselves.

At the same time I hope that I shall be able to give an account of other rock-paintings.

APPENDIX No. 1.

*Extract from a Paper on the History of the South Island Natives.
By the Rev. James W. Stack.*

“MAORI traditions trace the first occupation of this island back to Te Kahui Tipua (the monster herd or ogre band) a purely mythical race. They are described as giants who could stride from mountain range to mountain range, swallow rivers and transform themselves into anything, animate or inanimate, that they chose. They were succeeded by Te Rapuwai or Ngapuhi who spread themselves over the greater part of the South Island and who have left traces of their occupation in the shell heaps along the coast and far inland. It was in their time that the country around Invercargill is said to have been submerged, the forests of Canterbury and Otago destroyed by fire, and the moa exterminated.

“The traditions relating to these people are so vague and fragmentary that very little reliance can be placed upon them. It is with the Waitaha that the first reliable history of the Maoris begins. This tribe sprang from a chief of that name who came from Hawaiki in the canoe Arawa, commanded by Tama te Kapua. Their first home was on the shores of Lake Taupo, but they were soon driven away southwards by their more powerful neighbours and eventually crossed the Straits about 400 years ago. The Ngatimamoe supplanted the Waitaha, and were in their turn supplanted by Ngatikuri, the present inhabitants.”

APPENDIX No. 2.

Description of an Ancient Drawing on a "Rock Shelter" at Parihaka, near the Gorge of the Opihi, South Canterbury, by the Rev. James W. Stack.

"ALTHOUGH I had heard for many years from the Maoris of the existence of these drawings, which were popularly attributed to the Ngatimamoe, I was never able to examine them till November, 1875, when I went to see them accompanied by my friend Mr. C. M. Wakefield.

"Owing to the incompetency of our guide we were not taken to the spot where the best specimens exist, but to a long shallow cave or 'rock-shelter' on the north bank of the river Opihi.

"This cave is about 200 yards long, 10 feet wide, and 12 feet high, and protected from the weather by a dense growth of shrubs. The entire surface of the rock is covered with drawings, which, however, are unfortunately so defaced by modern scrawls that it is impossible to distinguish their exact forms. For since the natives have lost their superstitious regard for these relics of antiquity, the eeling parties who frequent the spot make a practice of scratching rude drawings with charcoal all over them.

"The only perfect specimen I could find was near the eastern end and at a height of 14 feet from the ground. It was about 5 feet long and had evidently been very carefully drawn. The black paint used by the artist has stood exposure so well that the lines from the crumbling away of the rock between them are now somewhat in relief.

"There is a remarkable difference between this drawing and those found at Waikari, so great that I hardly think that they can belong to the same period. The parallel lines on the Parihaka drawings bear a strong resemblance to the pattern on Maori baskets and the battens of ornamented roofs. Although I could not distinguish the shapes drawn, I saw everywhere the parallel lines and curves, but nowhere anything like the Waikari drawings, which are either only outlines or coloured throughout. This fact confirms in my opinion the statement made by Matiaha Tira Morehu respecting the far greater antiquity of the Waikari drawings.

"I showed the copy I made of the Parihaka drawing to the Rev. Koti Rato, Wesleyan minister at Rapaki, and to Hone Paratene, late M.H.R., and other intelligent natives who concurred in the opinion that it was the representation of a Tipua or fabulous marine monster. My own conjecture was that it was meant to represent a seal."

APPENDIX No. 3.

Note on the Tuna Tuoro. By the Rev. James W. Stuck.

“THE descriptions given of this eel vary so very much that it would be hard to believe that anything of the kind ever existed if it were not for the general concurrence of native testimony, both in the North and South Islands, to its existence.

“It seems to have combined some of the characteristics of the frog, the electric eel, and the water-snake. It uttered croaking sounds, rendered senseless anyone it touched, and pursued its prey with such rapidity that it was next to impossible to escape from it.

“In 1853 I was told by Hoani Huki, a Waikato chief and a catechist in the employ of the Church Mission, that when he was a lad (that was about 30 years before) he distinctly heard the tuna tuoro in the swamps of the Upper Waikato, that at that time the older men often describe their encounters with it and that they greatly dreaded it, for, when wading about eeling in the shallow waters, which it frequented, there was a danger of its gliding up imperceptibly and touching them, and anyone so touched was instantly paralyzed and destroyed. It would even pursue its prey on to the dry ground and its progress could only be checked by setting fire to the grass or fern when the ash adhering to its slimy body rendered it helpless and incapable of moving any further.

“Here in the South Island I have frequently heard of the existence of the tuoro within recent times. Tainui and Pita Mutu informed me that they once found on the beach near Greymouth, where they resided, what they believed to be a portion of the body of a tuoro; it was after a heavy fresh in the river, and they supposed that it had been carried down from some of the lakes in the interior. The skin they described as scaly, employing a flax plait of four to convey an idea of its appearance. Paora Taki, Native Assessor at Rapaki, also informed me that it was commonly reported 50 years ago that one existed near the source of the Purau stream in Lyttleton harbour.

“Though I believe that there must be some foundation for reports so common and so general regarding the recent existence of this strange creature, I am not prepared at present to put forward any theory about it, except that I think that it is highly probable that the Maoris have mixed up the descriptions of two or three different things which existed a short time back, but are now extinct.”

DISCUSSION.

Mr. WALHOUSE remarked, "The caving-in of the bases of mural precipices, which the author of this interesting paper aptly calls "rock-shelters" is not an unfrequent feature in rocky and mountainous tracts in India. Sometimes such a caving-in is utilised as a rude temple, a wall being built from the ground to the roof, and the recess behind formed into a shrine. I have two or three times seen the surface of the rock in such shelters painted over with figures of deities, tigers, and the like, in red and yellow colours, but these were of no great age. In the "Academy" of the 15th December last, there was a communication, giving an account of rock-painting in South Africa very analogous to those in New Zealand. The Rev. Mr. Büttner, of the German mission, reported that he had discovered Bushmen paintings on cliffs in Damaraland, a region far remote from the tracts now occupied by the Bushmen. They were painted in red ochre (as in New Zealand), and in some places protected from the weather by overhanging rocks, and represented Bushmen and Hottentots, armed with bows and arrows, chasing spring bats, with some rude attempt at perspective. There were also representations of giraffes, zebras, ostriches, and some nondescript animal. Respecting the characters which Dr. von Haast thinks resemble Tamil, I can feel little hesitation in saying that they are neither Tamil nor any combination of Tamil letters, nor in my belief, have any connection with any South Indian A'Ilabuk. Some faint resemblance to the *Chalukiya* character of the rock-inscriptions of the 6th and 7th centuries may be imagined, but no more. As to the enormous eel-like animal supposed to have existed within living memory in New Zealand, and to be depicted in the paintings before us, it is curious that marvellous accounts of a similar vast creature (the *Minhicao*) in the centre of South America, have lately come over to Europe. Compare the notice of the huge marsh serpents, the *Uócoh* in Australia, and the *Wowlvah* in the Mosquito territory, at page 290 of the number of this Journal for February.

Major-General LANE FOX thought that the author was hardly correct in saying that the ornamentation of the Maori was confined entirely to scroll patterns, and excluded the human form; the latter was frequently included in the ornamental patterns of the New Zealanders and in so far as the position of the legs was concerned these human figures were not unlike those shown in the rock-paintings. With regard to the scroll patterns, he had on several occasions expressed his conviction that those of the New Zealanders and that of the New Guinea Islands were so entirely identical as to afford proof of connection.

Mr. F. A. ALLEN remarked upon the interesting character of the inscriptions, and suggested that the instrument emitting fire and smoke might be that Papuan fire-stick or pop-gun, which Cook first

saw the natives use and which subsequent navigators have described. It seems either to be a native imitation of the first firearms seen, or else to have some symbolic meaning. Perhaps the numerous missionaries now located there could send us more details of Papuan customs. Otherwise, supposing the characters were Tamul, we might remember that gunpowder and firearms were mentioned as early as the Sacred Books of the Hindus. The custom of drinking (at a distance from the vessel) was common to both New Zealand and South India. Taylor, in his work upon New Zealand, called the bell discovered there Chinese or Japanese, and Van Diemen or Cook remarked a striking resemblance between the Maoris and Japanese.

Mr. MOGGRIDGE observed that one of the figures, No. 17, was the same as one which had been seen on rocks 6,900 feet above the sea in the N.W. corner of Italy. The inscriptions are not in colours as are those given in the paper, but are made by the repeated dots of a sharp pointed instrument. It is probable that if we knew how to read them they might convey important information, since the same signs occur in different combinations, just as the letters of our alphabet recur in different combinations to form words. Without the whole of these figures we cannot say whether the same probability applies to them.

The PRESIDENT, COLONEL GODWIN AUSTEN and MR. E. B. TYLOR offered some remarks.

THE SPREAD *of the* SLAVES. Part II.

THE SOUTHERN SERBS, BOSNIANS, MONTENEGRINS, *and* HERZEGOVINIANS.

By H. H. HOWORTH, Esq., F.S.A.

IN a previous paper we collected the evidence upon which it is now generally held that the Croats migrated about the year 634 from Gallicia and the Northern flanks of the Carpathians to their present situation at the head of the Adriatic, and also traced out their history till they lost their independence. We must now deal with their next neighbours, the Serbs. The Serbs and Croats are essentially the same race, sprung from the same stock and original homeland, and differentiated only by having separate histories. Croat, as we have shown, is a mere topographical name, derived from Khrebet (a mountain chain) and denoting the original country of the race, the Carpathians. It is a name without any ethnic value. Serb, on the other hand, according to the best Slave authorities, is essentially an ethnic name, and was apparently the generic name by which both

Serbs and Croats were originally known. Nay, further, Schafarik, whose authority I value very highly, deems Serb to be the original indigenous name by which the Slaves called themselves. He argues very forcibly that Jornandes, who was an Alan by birth, afterwards in the service of the Gothic king and eventually Gothic bishop of Ravenna, derived his information about the Slaves from Teutonic sources. He thus calls them generically Winidi or Wends, the name by which the Slaves are still known to the Germans, and he divides them into the two sections Antæ and Slavini. These two latter names do not occur before his time. According to Schafarik they were then probably new. It is not impossible that they were also of foreign origin.

While Jornandes probably derived his information from Teutonic sources, Procopius, who was a Greek, drew his account of the Slaves in all probability from the Slaves themselves. He says, "Both the Slavi and Antæ had formerly a common name and were called Sporoi, as I think, because they were Sporades, *i.e.*, living in scattered houses." This name Sporoi, the equivalent of the Winidi of Jornandes, Schafarik deems to be the oldest generic name of the Slaves extant. (*Op. cit.*, i, 92 and 93.)

This name of Sporoi, as the same author says, is not Slavic in form nor yet is it European, and he concludes with his very able predecessor, Dobrowski, that Sporoi is a corruption of Serbi.

In confirmation of this view he urges how in early times the name Serb is found applied to Slavic tribes in very remotely situated neighbourhoods, as in Upper and Lower Lusatia, on the Danube and the Save, north of the Carpathians and in Russia, and as further evidence of its indigenous character he names the fact that the tribe is cited by Pliny, who tells us that on the Kimmerian Bosphorus lived the Mæotici, the Vali, the Serbi, the Arrechi, the Zingi, and the Psesii, while Ptolemy tells us that between the Keraunian Mountains and the Rha (*i.e.*, the Volga) dwelt the Orynai, the Vali, and the Serbi. (Schafarik, i, 95-96.)

I confess that I am not at all convinced by this argument of Schafarik. Procopius was a singularly accurate historian. His value in this respect has received the especial notice of Gibbon, and it seems incredible to me that he should have given us such a corrupt form of the name Serbi as Sporoi, a form which is so entirely different in sound to the word Serbi. Again, as to the name being widely disseminated, it will be found to be explained, not by Serb having been a generic name applied to all the Slavic race, but by the fact, which we hope to prove, that the Serbs proper, migrated to very different areas from their original homeland. As to the mention of Serbi by Pliny and Ptolemy, I agree

with Zeuss, that the area named as their home and the tribes they are mentioned with prove that the Serbi of these authors were a different race altogether from the Slavic Serbs of later days, and Zeuss suggests they had as much to do with them perhaps as the Suevic Scythæ who lived on the Imaus according to Ptolemy had to do with Suevi of Germany. (Zeuss, 608, note.) Let us now examine the forms and etymology of the name; the former I shall extract from the elaborate account of Schafarik. Vibius Sequester calls them *Servetii* or *Cervetii*; Fredegar, *Surbii*; the chron. Moissiac. *Siurbi*; the Lorsch Annals *Suurbi*; Alfred the Great, *Surpe* and *Surfe*; Reginon and the Bavarian geographer *Surbi*; a Silesian Chronicle quoted by Sommerberg, speaks of a *Surbiensis provincia*; in a deed of 1136, we have *Swurbelant*; in Biterolf, *Surben*; in Eginhardt, the Fulda Annals, Adam of Bremen, Helmold, etc. *Sorabi*; by Peter Bibliothecar Soavi (for *Soravi*); by Kadlubek, *Sarbiensis prov.*; in a deed of 873, *Sarowe prov.*; in Boguchwal *Sarb*; in the glosses to the *Mater Verborum* of bishop Salomo, *Sirbi*; by Sigebert Gemblacensis, *Sirbia*; by the Emperor Constantine Porphyrogenitus, *Serbli* and *Serbii*, also *Serbia* (the modern town of *Srbiça* in Macedonia); in a deed of 949 *Ciertvi* (the town of *Zerben*); in the foundation charter of the Bishopric of Brandenburg, dated in 949, *Ciervisti* (referring to the *Zupa* or *Gau* of that name); in a deed of 975, *Kirrusti*; in Cod S. Meuric, *Kiruiti*; in another deed of 1003, *Zerbiste*; in Dithmar Merseb. *Ziruuisti* (the modern *Zerbst* the capital of the *Gau*); in a deed of 1147, *Zeviriske*; in others of 1161, *Cervisti*, of 1196 *Cherevist*, of 1197 *Cherewist*; in a deed of 961, *Zurbici* (now *Zorbig* in the district of Leipzig) by Dithmar *Zurbizi* and *Çurbizi*, by the Annalista Saxo *Zurbike*; in a deed of 1144, *Zorbwech*; in another deed, *Sorbek*. Dithmar and the Annalista Saxo mention a town *Zribenz* (now *Schrenz*). We have in a deed of 1040 mention made of the *Gau* of *Zurba*; in a deed of 1060 a town of *Serebez* (now *Sehrabiz*). Cedrenus speaks of the *Serbii*; Zonaras, Anna Comnena, etc. of the *Serbi*. In a Munich MS. of the 11th century, we have *Zeruiani* (for *Serbiani*). In the glosses of the Bohemian Wacerad in 1102, *Zirbi*; in Cosmas, *Zribia*, *Zribin*. In Nestor in the MS. of 1377, *Sereb* and *Serb*. In Serbian documents of the 12th to the 14th century, *Srb'* *Sr'b'l'*, *Sr'bin*, *Sr'blin*, *Sr'bli* (plur.), and *Sr'bsky* (adj.). In Dalimil *Srbowe*. The Southern Serbians still call themselves *Srb*, *Srbin*, *Srbljin*, *Srbljak*, while the northern ones of Lusatia are styled *Serb*, *Serbjo* (plur.), *Serbski* and *Serski* (adj.). In Russia and Poland we have numerous places compounded of the name, as *Serebszczyzna*, *Sierbszczyna*, *Serepczynna*, or *Sierpczynna*, mentioned in a Lithuanian Statute of 1529, which is written *Ser-*

bowie and Serbia by Bielski in his chronicle of 1597, and Serbowie Serbin, Serby by Blazofsky in 1611. We find places called Serben and Serbigal in Liefland, Serbino in the Government of Saint Petersburg, Sierby in Minsk, Serbowski in Chernigof, Serbi and Serbinowka in Volhynia; these are in Russia. In Poland we have Serbentyńie, Serbentyńy or Serbentyszki in the voivodeship of Augustowo, Serbinof in Sandomir, Sierbowice in Krakau, and Sarbice, Sarbicko, Sarbiewo, Sarbin in the districts of Krakau, Plotsk and Kalisch in Western Galicia, etc. The Latin forms of the name, as is well known, were Servi and Serviani. (Schafarik, *op. cit.*, 175–177.) Schafarik is no doubt right in reducing all these various forms to the root Serb or Srb (*op. cit.*, i, 177 and 178), but when we come to attach a meaning to this root-word we are met with profound difficulties.

The Emperor Constantine has an etymology of his own; he speaks of “the Serbli, who in the Roman tongue are called Servi;” and adds “that from them the shoe of a slave was called Serbula, and that those were called Serbuliani whose shoes were of a rude and poor character.” He adds “they were called Servi since they *served* the Roman Emperor.” (Stritter, ii, 152 and 153.) Schafarik with considerable confidence connects the word with an old Slavonic root, Sir (orbus); in Russian, siryj, sirota; in Serbian, Croatian, Karinthian, and Slovak, sirota; Bohemian, sirotek, sirube, siroba; Lower Lusatian, sirota; in Upper Lusatian, syrota, Syrotstwo; Polish, sierota, sieroce, sieroci, words connected with the Sanscrit su (generare, producere) in Lat. sevi satum from se rere for se sere (se reduplicated); Gothic, saian; Scandinavian, soa (serere), etc., etc. (*Op. cit.*, 179.) This etymology seems to me to be exceedingly farfetched and improbable, and I cannot accept it for a moment. I much prefer to side with the learned and very critical Dobrowski who after a most searching inquiry among all the Slavic dialects could find no reasonable etymology of the word. (Dobrowski, *Inst.* I, Slav, p. 154; Schafarik, *op. cit.*, i, 174.)

This conclusion makes it a proper subject of inquiry whether the name be not a foreign one. Now in my various inquiries into Slavic history I have been very much struck by a fact which is its leading factor, namely, that the Slaves, *per se*, are a helpless, weak, childlike race, incapable of originating or of carrying out great innovations or great conquests. That the leaven which has ever leavened the various branches of the race has been of foreign importation, and that the leaders, the upper strata among them, who have alone shown energy and skill and enterprise have been foreigners and not natives. Thus in Russia the people who gave its name to Russia, and from whom the older dynasty and older aristocracy were descended, were the Scandi-

navians. In later times the Tartars and the Germans have been the salt of the community. The Bulgarians were led and governed by a caste of foreigners, the Turanian Bulgars, the Slovaks and other Slave races of Hungary by the various Turanian tribes who have occupied that area from early days. The Croats, as we have shown, were in close connection with the Avars who also conquered the Antæ.

This dependence on a more vigorous race of leaders has been well expressed by a recent correspondent of the *Standard* in one of a series of able letters in which he argues that the recent consolidating influence among the Russian Slaves has been its German element. Without it the race is as mobile as mercury.

This being the character of the race wherever we can test it, it would assuredly be an extraordinary fact if the Serbs who both to the north and south of the Carpathians were so vigorous in early days should have been an exception to the rule. I believe they were not so, but that like the Slaves of Bulgaria, they were led by a foreign race who supplied their upper class.

If we postulate this as more than probable, we may then connect them, as Schafarik has done, with the Serbi or Surbi of Pliny and Ptolemy; this tribe which from its habitat and from the names of the tribes with which it is linked, we may take to have been of Alanic or of Hunnic blood, was no doubt thrust westward in the various race migrations that took place in South-Eastern Europe from the 5th to the 7th century, and just as the Bulgars led a race of Slaves into Thrace so I believe the Serbi or Surbi overcame and led another branch of the same race southwards towards the Danube, and westwards towards the Elbe. In this view the Serbi or Surbi were not originally Slaves at all, but a conquering tribe who led a race of Slaves. This is my view of the origin of the name; let us now turn to the history of the race. In the present notice we shall limit ourselves entirely to the Southern Serbs, leaving their northern brothers to be treated in another paper. As in the case of the Croats, Constantine Porphyrogenitus is the author who first describes the migration of the Serbs. He tells us that after the migration of the Croats, who had been summoned, as I have mentioned in the previous paper, to his assistance by the Emperor Heraclius the Serbli also went to the same emperor. (Stritter, ii, 393.)

Schafarik, who has discussed the dates of this migration, concludes, I think very reasonably that, the Croats migrated in 634, and the Serbians in 636, (*op. cit.*, ii, 241.) They were sprung, says the emperor, from the unbaptized Serbians who were also called White, and dwelt beyond the Turks (*i.e.*, the Magyars), in a place called Boiki by them, which is not far from Francia, and also near to Great Croatia, which is also called White (*Stritter, op.*

cit., ii, 151.) He also tells us that this land of Boiki was watered by the Bislas or Ditzike. (Schafarik, ii, 239, and 243.) I have already in my former paper discussed Schafarik's very reasonable conclusions about Boiki showing that it did not mean Bohemia, but the land of the still surviving Ruthenian Boiki. (In the Ruthenian dialect Bojki, singular Bojok; Schafarik, ii, 243.) These Boiki live in Eastern Gallicia from the sources of the Dniester to the Pruth. In the districts of Sambor and Stryj in the lower parts of Stanislawof and Kolomyj and scattered about in Chorkof and even further north. (Schafarik, ii, 243.) I may add as a remarkable confirmation of the argument previously addressed that the Serbi were originally an Alanic or Hunnic tribe that Jornandes in enumerating the Hunnic tribes on the Maeotis mentions the Boisei which is assuredly another form of Boiki. It may be also remarked that the use of the term white as equivalent to great or free in the phrases White Serbia or White Croatia is essentially an Eastern expression in use very generally among the Turks, and other Turanian tribes.

The White Serbia of Constantine then is to be identified with Eastern Gallicia and Red Russia. This is largely confirmed by the fact that the language of the Southern Serbs and the Croats is closely related to the Ruthenian and White Russian. (Schafarik, ii, 245.) The topography of the two districts also strengthens the same conclusion; thus we have the Cetina a tributary of the Bug, and a Cetina in Dalmatia, San in Gallicia San in Carinthia and Sana in Bosnia, etc. etc. (*Id.* 246.) A number of words which in the Serbian and Croatian languages are like those in Lettish, Lithuanian, and Old Prussian show that they must formerly have been in close contact with the latter races. Thus: Illyrian, *dekla, dikla* (puella, ancilla) Lett, *dehkla* (dea virginalis); Serb *sukun-djed* (atavus), *Sukun-baba* (atavia), Lett, *sugga* (familia); Serb *kuća* (canis femina), Lett, *kuzza*; Serb, *dubok* (profundus), Lett, *dohbis* (cavus), Lith. *dubbus*; Serb, *klanac* (fauces montis, semita montis) Lith, *kalnas* (mons.); Serb, *gruwati* (percutere cum sonitu), Lith, *grauju* (durio, tono); Serb, *griza* (tormina), Lith, *grizzas*; Serb *wlat* (spica), Croat, *lat*, Lith. *waltis*.; Serb *lud* (fatuus), Lith, *letas*; Serb, *tek* (vixdum solum), Lett, *teek*; Serb, *kosa* (capilli) Lith, *kassa* (tress of hair); Serb, *kruska* (pirum), Lith, *krausze*; Serb, *krs* (adluvis), Illyr *krs* (rupes), Lith, *krasuzus* (præruptum ripæ); Serb *kucati* (pulsare), Lith, *kucus* (fustis); Serb, *lanac* (catena), Lith, *lencugas*; Serb, *wienkawati* (jungere connubio), Lith *wenczawoju*; Serb *razboj* (latrocinium), Lith, *razbojus*; Serb, *grabiti* (rapere), Lett, *grabht*, *grahbt*; Serb, *kukawica* (miser, misera), Lett, *skukkis* (puella misera); Serb, *cupati* (vellere) Lith, *czopti*, etc. etc. We also find such names as Prusna, Prusjen or Prusin, Prus-

ianos (in 1017 in Cedrenos) and Prusez a town of Bosnia, in the southern district which carry us north to the kingdom of Prussia on the Baltic. (*Id.* 245 and 247.)

Constantine tells us definitely that the land of the unbaptized Serbians was watered by the Bislas, which was also called Ditzike (Stritter ii, 406.) Bislas is clearly Wisla, the Slavic name of the Vistula. Schafarik suggests that Ditzike if not a corruption of Dikitse or Tykitsch was probably the name of some tributary of the Vistula, Bug, or Niemen, whose name has been mistaken by Constantine for a synonym of the Vistula (*op. cit.*, ii, 248.) All these facts converge to one conclusion, namely, that the homeland of the Serbs before their migration southwards was in Eastern Galicia and its neighbourhood. We shall probably have more to say of it when we come to deal with the Northern Serbs.

Constantine Porphyrogenitus tells us that on the death of one of their princes, the younger of two of his sons who divided his heritage led his people southwards, and asked the Emperor Heraclius for land to settle in. He granted them a district in the government of Thessaly which was afterwards called Serbia, but before long they grew discontented and asked the emperor's permission to return to their old land. (Stritter, ii, 151-2). The name of the town Serbitza on the Haliakmon, about nine leagues from Thessalonica, seems to show that some of them remained behind in Macedonia. (*Id.* ii, 239, note.) On crossing the Danube they regretted the step they had taken and longed for fresh settlements. They again approached the emperor through the Byzantine governor of Asprokastron or Belgrade. "He accordingly granted them," says Constantine, "the district now called Serbia and Paganía which was known as the country of the Zachlumi, Terwunia and the district of the Canalitæ, which were subject to the emperor, but which had been laid waste by the Avars who had driven the Roman inhabitants out and forced them to seek shelter in Dalmatia and Dyrrachium." That is, he granted them the country watered by the Drina, the Bosna and the Urbas, and bordering on that occupied by the Croats. The Avars were driven out and the Serbs settled down on the three rivers just named and extended themselves to the Adriatic. This second migration, the first having been probably in 636, took place in the year 638. (Schafarik, ii, 241.)

The country thus occupied by the Serbs was eventually divided into seven districts or *gaus*, *i.e.*, Serbia Proper (still so called); Bosnia, Neretwa, Zakh'luma, Terwunia, Kanalia and Dukla or Doklea, (*id.* 249). Each of these districts was governed by a Zupan. Of these the Serbian Zupan was the chief. He had his capital at Desnitza (Destinika of Constantine) on the Drina. The grand Zupan was, according to the Serbian

and old Slave custom, styled Starjesina (senior), and had authority over all the other Serbs, except the Neretshani or Pagani, who were entirely free and uncontrolled (*id.* 249). The Emperor Heraclius sent for priests from Rome, who introduced Christianity among the new settlers as they had among the Croats, but they do not seem to have had much success among the Serbs, who, to a great extent, remained attached to their old faith, and on the death of Heraclius in 641, fell completely away from their dependence on Byzantium. Constantine says nothing of the successors of the first prince, except that he was succeeded by his son and grandson. (Stritter ii, 153.) After some time reigned their descendant Boiessthabus, or Wyscheslaf, who lived about 780 (?) A.D. (Schafarik, ii, 250.) Then followed in turn Radoslaf, Prosigoi and Wlastimir. We do not know the name of the Serbian ruler to whom the Croatian prince Liudewit fled in 822, as Eginhardt tells us, and who was treacherously killed by him.

Wlastimir's reign fell between 836 and 843. Hitherto the Serbs and Bulgarians had lived at peace, but we are told he repelled the attack of the Bulgarian prince Presia, who waged a war of three years against him without other result than losing many men. He married his daughter to Kraian, the son of Belof the Zupan of Terwunia, and also conferred on him the title of prince, and released him from his suzerainty, a prerogative which was inherited by his sons Khwalimir and Zuzimir. (*Id.*)

Wlastimir's heritage was divided among his three sons Muntimir, Strojuni, and Gojnik. They had an important struggle with the Bulgarian King Michel Boris, the son of the Presia above-named, who wished to revenge his father's defeat, but he was himself beaten, and his son Wladimir was captured together with twelve war engines. (Schafarik ii, 176 and 177, and 250, Stritter ii, 155). This defeat led to peace being made between the two powers, and we are told the Serbian princes accompanied Boris on his return home as far as Rasa, which was on the Bulgarian frontier, from which statement, and also from the report of the envoys sent by the Constantinople Synod in 869, it would appear that the ancient Dardania lay within Bulgaria.*

A mention in contemporary narratives of a Bulgarian Morawa, and the statement that in 885 there was a Bulgarian governor at Belgrade, shows that the valley of the Serbian Morawa and of the Ibor, or so-called Lower Morawa, were in Boris' time subject to Bulgaria (Schafarik, ii, 177).

* Dardania was the district where the Morawa and the Ibor sprang and extended from Prishtina as far as Nisch.

We will not trace the history of Serbia any further in detail, nor relate its many struggles with the Bulgarians, with the Greek empire, with Hungary and the Dalmatian towns, nor shew how its alliances and its sympathies were at length ruled by its attachment to the Greek Church, which only secured its prize after a long struggle with the Latins. The capital of Serbia in early times was Dioklea, in later times Rasa, now called Novi Bazar. We will pass over the long interval between the 9th and the 14th century and turn to the days of the Great Serbian hero, Stephen Dushan.

Stephen Dushan was crowned King of Serbia on the 8th of September, 1331. At this time there had been considerable confusion in Bulgaria, but matters were at length tolerably settled by the elevation of John Alexander, the nephew of the former King Michael, to the throne. Alexander was the son-in-law of Ivanko Besseraba the Prince of Roumania, and he married his sister Helena to Stephen Dushan. The three rulers of Serbia, Bulgaria, and Roumania, now made a common alliance against the Greeks and Hungarians. (Jirecek, *Gesh. Bulg.*, 297–299.) Besseraba defeated the Hungarians, and Alexander fought successfully against the Greeks, but Stephen Dushan's victories were the most important. In the first three years of his reign he conquered Ochrida, Prilep (where he built himself a palace), Kastoria, Strumiça, Khlerin (now Lerin or Florina) Zeleznec (the Turkish Demirhissar north of Prespa), Voden, and all Western Macedonia. (*Id.* 299). At this time there was terrible confusion in Albania, whence the mountaineers had issued and ravaged the neighbouring districts in various directions. In 1336 Dushan invaded Northern Albania, and speedily appropriated the whole country except Durazzo.

Meanwhile, the condition of the Byzantine empire was rapidly becoming desperate, attacked as it was on the one side by the Slavs and on the other by the Turks, while its forces were paralysed by internal dissensions.

Andronicus the Third died in 1341, and left the throne to his son John, the Fifth, Palaeologos, against whom the ambitious John Kantakuzenos rose in rebellion, and planted his seat of empire at Didymotilchon on the Maritza. This feud was the signal for the Slaves to attack the empire. Alexander and his Bulgarians made a savage raid upon Thrace. We now find Kantakuzenos allying himself with Alexander of Bulgaria and with Stephen Dushan, and we are told that 24 Serbian voivodes accompanied him in his attempt to secure the Greek throne (Ranke's *Serbia*, 14). The Serbs and Greeks were naturally drawn together by their common faith, and had a common ground of opposition to the Latins; and while Kantakuzenos

conquered Thrace, Stephen Dushan appropriated Macedonia, where many of the inhabitants were of Serbian descent. The Byzantine authors compare him at one time to a fiercely raging fire, at another to a swollen torrent overflowing far and wide. (*Id.*, 15). He now, *i.e.*, in 1346, had himself crowned Tzar of the Serbs and Greeks at Skopia, and gave his son Urosh the title of kral or king, while with the consent of the patriarchs of Timova and Okhrida, he made the Archbishop Johanniki Patriarch of Serbia (Jirecek, 304). On another side Dushan defeated Louis the First of Hungary, and seems for a while to have occupied Belgrade and rescued Bosnia from an obstinate ban (Ranke, *op. cit.*, 15 and 16).

In 1347 Stephen Dushan was received with great honours at Ragusa, while Arta and Joannina were in his possession, and thence his voivodes spread themselves over all Roumelia on the Wardar and Marizza as far as Bulgaria. (Ranke, 16.) His reign was in fact the apogee of Serbian prosperity. His dominions reached from Arta to Belgrade and from the Dalmatian Mountains to the Mesta. In Macedonia the Byzantines only retained Thessalonica and he is proudly styled the Tzar of the Serbs and Greeks, of the Bulgarians and Albanians. Trade flourished greatly at Skopia, Novo Brdo, Prizren, and Kattaro where the Venetians, Ragusans, and Saxons planted factories and shops, and in 1349 he issued a famous code of laws to govern his subjects. (Jirecek, 305.) Alexander of Bulgaria was dependent on him, and his brother was Dushan's Governor of Albania. We need not wonder when we survey this picture that the Serbs look back to the days of Stephen Dushan as their golden age, but in the light of contemporary history we cannot forget one important fact which has been noted by a traveller in Serbia, who thus expresses himself: "The brilliant victories of Stephen Dushan were a misfortune to Christendom. They shattered the Greek Empire, the last feeble bulwark of Europe, and paved the way for those ultimate successes of the Asiatic conquerors, which a timely union of strength might have prevented." (Servia, by Paton, 222.) Dushan was about to invade Thrace with 80,000 men, with the intention of conquering Constantinople, when he suddenly died on the 20th of December, 1355, and with him passed away the glory of Serbia. His son, Urosh, was only 19 years old, while Simeon, Dushan's brother, and Helena, his widow, struggled for supreme power, and the pernicious aristocracy of the voivodes, which has been a terrible scourge to Slavonic communities, as may be seen in the history of Poland, broke out into open revolt and divided Roumelia into a number of petty states, probably only nominally dependent on Urosh, and they submitted them-

selves presently to the Osmanli, whose opportunity was created by these selfish quarrels. Urosh was murdered in 1368 by one of these feudal chiefs, namely, Vukashin, kral of Pheres. He was succeeded by Lazarus, a natural son of Stephen Dushan, who was styled merely kniaz Lazar. He was a pious and generous prince, and a brave but unsuccessful general. (Paton, *op. cit.*, 222.)

The Turkish system of occupying conquered countries with military colonies and carrying off the original inhabitants, says Ranke, excited a great national opposition in the year 1389, and a league was formed of the Serbians, Bosnians (who had regained their independence), and Albanians. The united troops were commanded by Lazar and Wuk Brankovitch, who had however been gained over by the Turks. Before the battle Milosh, the son-in-law of Lazar, entered the tent of Amurath, the Turkish sultan, and assassinated him. The fight took place on the following day on the famous field of Kossowa, in which Lazar was killed and Serbia was laid prostrate. It was fought on the 15th of June, 1389. Amurath's successor, Bajazet, nominated Stephen the son of Lazar, whose sister he married, king or despot of Serbia, and the latter served the Turks faithfully during his life. On his death he was succeeded by George, the son of Wuk, who was deposed by the Turks, in 1458, and Serbia was incorporated with the empire; nor was this altogether unwillingly. I have mentioned that the Serbs were strongly attached to the Greek faith, of which Stephen Dushan was a great champion, one of his laws ordaining that whoever endeavoured to pervert anyone to the Latin heresy was to be sent to work in the mines. This jealousy of Greek and Latin raised a great barrier to any common action between the Serbs and their northern neighbours, the Germans and Hungarians. A Serbian song, says Ranke, relates that George Brankovitch once inquired of John Hunyad what he intended to do with regard to religion, should he prove victorious. Hunyad did not deny that in such an event he would make the country Roman Catholic. Brankovitch thereupon addressed the same question to the Sultan; who answered that he would build a church near every mosque and would leave the people at liberty to bow in the mosques, or to cross themselves in the churches according to their respective creeds. The general opinion was that it was better to submit to the Turks, and retain their ancient faith than to accept the Latin rites The Serbians themselves invited the Osmanlis into their fortresses, that they might not see their strongholds given over to a Cardinal of the Romish Church. (*Op. cit.*, 29.) The Serbians did in fact what the Bosnian Paterenes did, namely, called in the Turks rather than surrender

their ties to their Church. But there was this difference:—in Bosnia and a large part of the Herzegovina the landowners adopted Islamism and retained their lands. In Serbia it was not so. The ancient noble class almost disappeared, the family of the Brankovitch's however retained till the beginning of the 17th century, their castle and possessions at Semendria. (Paton, 290.) The Kara Panshitshis kept their hold upon the Kraina while Starewala, and Klintsh also had their kniases or princes. The country was divided out among the Turkish Spahis, who had full authority both over the persons and the property of the Serbian peasants. (Ranke, 22.) Such at least of them as remained, for the Turkish conquest led to a migration of 37,000 Serbian families into Hungary. (Paton, *op. cit.*, 291.) The Serbians aided the Emperor Leopold greatly in his Turkish wars, and their brothers beyond the Save rose in rebellion to assist him. By the peace of Passarowitz a large portion of Serbia fell into the hands of the emperor. It was, however, recovered by the Turks, who wreaked their vengeance on the families of the rebels. They abolished the national Serbian hierarchy, and the Serbian bishop became subject to the Patriarch of Constantinople. The Turkish Spahis, as I have said, were the owners of the land, and the native Serbians became merely rayahs or cultivators who had to pay the Spahis rent. This was in fact a kind of hereditary stipend in return for which they rendered military services. The Spahis, according to Ranke, although not belonging to the ancient nobility, were mostly of Serbian extraction and language. (*Op. cit.*, 51.) They differed from the rayahs chiefly in belonging to another faith. They lived in the towns, while the rayahs occupied the open country. I shall not relate the story of the emancipation of the Serbs in detail. How it was brought about by the turbulence and tyranny of the Janissaries, whose leaders styled themselves deys or dahis, like the rulers of Barbary and Tripoli, and who lorded it over both the Spahis and the rayahs. How they succeeded in appropriating the land of the former and compelling them to migrate, and how eventually, when the Janissaries were extinguished, the rayahs themselves rose in rebellion and won their practical independence, exchanging the direct rule of the Sultan for the payment of an annual subsidy, and buying out the claims of their former masters, the Spahis. I would mention, however, as a fact equally interesting to the ethnologist and the historian that Serbia is essentially a peasant community. It was the peasants who won its independence, and it is the descendants of peasants who control its affairs now. This absence of a class or caste of leaders, who by the fact of belonging to a superior race and of inheriting wealth and traditions, is

generally found to be the guardian of chivalry, patriotism and the other unselfish public virtues may account for much in the later history of Servia which is not heroic and for the absence of what Ranke deplores—a more elevated tone of morality.

I will now pass on to consider the Serbs of Macedonia. As has been shown by Falmerayer and others, Greece was overrun and conquered by the Slavonians and Avars in the beginning of the 6th century. The Serbs who were called in to his assistance by Heraclius, first advanced, as I have shown, into Macedonia, where they would find, no doubt, considerable settlements of their countrymen. When they retired they left a small colony behind them which gave its name to Serbitza in Macedonia. Bohucz, the learned archbishop of Mohilef, in his "*Histoire des Sarmates*" would make out that the Slavonian element in Macedonia and the Morea is derived from this source. (*Op. cit.*, i, 115-117.) This view I cannot accept. These Macedonian Slaves are in the main no doubt descended from the earlier colony. It was probably not till the 14th century that any considerable body of Serbs migrated into Macedonia. During the reigns of Milutin, Stephen Urosh the Third, and Dushan, a Serbian named Khrelia, filled the post of Protosevast, and ruled the conquests they had made in Macedonia. He at length rebelled with a force of 1,000 men, and set up as an independent prince, ruling over three towns, with his residence at Strumiça, and the title of Cæsar Khrelia. He died in 1343. (Jirecek, *op. cit.*, 301.) His principality was annexed by Stephen Dushan.

On the latter's death, as I have mentioned, his possessions in Macedonia broke up into a number of small principalities. His brother, Simeon Palæologos Urosh, the ruler of Thessaly, Epirus, and Aetolia, was crowned at Trikala emperor of the Serbs and Greeks. He died in 1371, and left Epirus to Thomas, the son of the voivode Preliub, who ruled till 1385 and had a chronic struggle with the Albanians.

In Thessaly Simeon was succeeded by his son Johannes Urosh, the last of the stock of Nemanja, a famous ancestor of Stephen Dushan, who on the invasion of the Turks in 1410 became a bishop and the founder of the Meteor Monastery. (*Id.*, 319.)

The rest of the southern conquests of Dushan and his predecessors were divided into several small principalities. Thus Seres and Melnik fell to the brave despot Joannes Uglyesa. His brother Ulkasin first, *i.e.*, in 1356, filled the post of Selnik at the court of Dushan's son, Urosh, but he afterwards also took the title of despot. Uglyesa's father-in-law set up authority at Drama, while in South Macedonia, from Seres to Vardar, Bogdan, who is still remembered in the ballads of the country, became

chief. North of him was the Sebastocrator Deyan. Albania was divided between two Albanians, Andreas Musaki and Karl Thopia, the latter ruling the countries between the rivers Mat and Skumbi. North of them was the Slav Alexander, Gospodin of Valona and Kanina. Othrida fell to the Albanian Zupan Ropa or Gropa. Radoslaf Khlapen, Musaki's son-in-law, had the Macedonian Berrhoea. Zetla and the land round the Gulf of Scutari, *i.e.*, the modern Montenegro, obeyed the family of Balsa (*vide infra*). Herzegovina fell to Voislaf Voikhnovic, who was driven away by his nephew Nikola Altomanovic. The famous family of the Brankovitches trace their descent from the Sebastocrator Branko, who under Dushan was governor of Okhrida. (*Id.*) These various petty principalities had only an ephemeral existence, and were speedily overwhelmed by the Turks.

Let us now turn for a while to the fragment of the Serbian kingdom which survived in the Black Mountains.

After the terrible battle of Kossowa, where King Lazarus was killed, Prince George Balsha who had married the Despina, a daughter of the Serbian king, became independent in the old Zupa of Zenta, whose black mountains gave it its Italian name of Montenegro and made it also a suitable asylum for the fragment of the Serbian power, which survived. Stratzimir, the son of Balsha, was called Tzernoie (*i.e.*, black) from his dark complexion, and he gave his name to the family of Tzernoievitch. Their son Stephen Tzernoievitch was a contemporary of the Albanian hero Skanderbeg, whom he aided by sending him a contingent of Serbians under his second son Bozidar (*i.e.*, divine gift).

Stephen left three sons, Ivan, Bozidar, and Andrew. On Scanderbeg's death in 1467, the Turks conquered Albania and the Herzegovina, and then turned upon Zenta. Ivan appealed to Venice in vain, and then abandoning his capital Zabilak (on the Moracsa now in Albania) to the Turks, he retired into the mountains, and in 1485 founded the convent of Cetinje, where he fixed his capital. Ivan was succeeded by his son George, who was a patron of learning, and introduced a printing press into the country, where many books of the Church service were printed. They are the oldest in the Cyrillic character, dating as early as 1494. He married a Venetian lady of the family of Moncenigo, by whom he had no children, and who persuaded him to retire to Venice. This he did with the consent of the people, and resigned his authority into the hands of the spiritual chiefs. The metropolitan Germen thereupon undertook the direction of affairs, introduced the present Theocratic form of government, and became the first Vladika.

The Turks succeeded in gaining over many of the people to

Islam during the next century, and Montenegro was treated as a portion of the Pashalic of Scutari, but they could not conquer the country, although they ravaged the valley of Bielopavlich with an army of 30,000 men. In 1623, Suleiman, Pasha of Scutari, penetrated as far as Cetinje, where he destroyed the convent, but he was compelled to retire with heavy losses.

Towards the end of the 17th century, Daniel Petrovich-Negosh was elected Vladika, and from that time the episcopal dignity has continued in the Petrovich family.

I shall not trace the history of Montenegro further in detail. The story has been well told by Wilkinson (Dalmatia and Montenegro). It will suffice to say that that history is a singularly heroic one, and that probably no community of modern times so well represents the virtues and prowess of ancient Sparta as that which lives in the Black Mountains. Time after time the Turks have invaded the land and devastated it with fire and sword, burnt its capital, Cetinje, and almost depopulated large districts, but it has never been conquered, and has earned the right to become the future hope of the South Slavonians. Its government until lately was a singularly patriarchal one. The popular diet meeting in the open air was the deliberative body, while the Vladika was at once high-priest, judge, legislator, commander-in-chief, and civil governor (Wilkinson, *op. cit.*, i, 460.) He was the only remaining instance, says Wilkinson, of the military bishops who played such an important part in the wars of the Middle Ages, nor was he inferior to those of former days in courage and prowess. For a long time the office of governor was held by a distinct person, and had become hereditary in the family of Radomit, but it became almost nominal, and was at length suppressed.

The language of Montenegro, says Wilkinson, is a very pure dialect of Slavonian. The Montenegrins themselves call it a Serbian dialect, which it no doubt is; and Krasinski says it is considered the nearest of all the Slavonian dialects to the old Slave tongue into which the Scriptures were translated by St. Cyril and Methodius in the 9th century. The dialect of the Maritime Serbs to the north is a good deal corrupted with Italian words, while that of Bosnia has been similarly sophisticated by Turkish. (Wilkinson, *op. cit.*, i, 450.)

The Montenegrins have generally good foreheads, but the face is not well shaped, being rather square (which is particularly observable in the women) with rather high cheek-bones, and the lower jaw projecting a little at the side. Many are nevertheless very handsome. Their eyes are rather near than far apart, mostly hazel, and some few light blue. The hair is brown, sometimes dark, but rarely black. The profile of

the men has generally a decided outline, with a moderate aquiline or straight nose. In stature they are much above middle height, some are very tall and they are well proportioned. Their voices are powerful and they can converse at long distances (*id.* i, 450 and 451.) The moral and physical qualities which distinguish them so clearly from the other Southern Slaves, seem to point to their blood not being so unmixed as their language. They have apparently married considerably with the Albanians to the south. Their dress is nearly the same as that of the Albanians, whom they also resemble in wearing the fez and turban, and having a long lock of hair projecting behind; also in the absence of beards (*id.* 452 and 453).

Let us now turn to another part of the ancient Serbia, which has a tolerably substantive history, namely, Bosnia.

In the time of Constantine it formed a district of Serbia Proper, but it would seem that it had even then its own Zupan who was dependent on the Grand Zupan. Bosnia took its name from the river Bosna, a tributary of the Save which waters it. Constantine mentions two towns within its borders, namely, Katera, the modern Kotorско or Kortoritza on the river Bosna and Desnik, probably the modern Desan or Tesan on a small tributary of the same river (Schafarik, ii, 261.) Although it is probable there was a separate Zupan of Bosnia from early times, the first time a Bosnian Zupan is named is in the year 1080. (*Id.* 256.) It would seem that in the early days of Croatian prosperity, the Croats appropriated a part or the whole of Bosnia, and according to Mr. Evans, when the King of Croatia died childless, a new king was elected by the seven Bans of the crown lands, one of whom was the Ban of Bosnia. The seven are enumerated in a deed of the year 1100 (Through Bosnia &c, xxvi) Bela Urosh (1120–1136) granted it to Ladislaf, the son of his daughter Helena, and he held it for some time as the Ducatus Bosnensis under the authority of the Hungarians who had conquered Croatia. The Magyars called Bosnia Rama, from the river of that name flowing into the Narenta (Evans, *op. cit.*, xxvii, Schafarik, ii, 257). In 1141 Geza the Second of Hungary completed the conquest of Bosnia, but its position remained more or less independent, and the Byzantine Chronicler Kinnamos, in describing his master Manoel's campaign against the Magyars, tells us the Drina divided Bosnia from the rest of Serbia. Bosnia was not then subject to the Grand Zupan of Serbia, but the people were at that time under their own magistrates and used their own customs (Stritter, ii, 177). Mr. Evans, in his learned and most valuable book, "A Walk through Bosnia and Montenegro," has written the history of Bosnia in detail, and has explained what a powerful element the Paterenes or Bogomils

(the Manichæan sectaries of its isolated districts) were in its various internal revolutions, and what a struggle its brave people and their ban had against the aggressive Roman Catholics of Hungary who threatened to overwhelm them. For the story of the contest I must refer to his pages, and will give only the concluding episodes. In 1444, Stephen Thomas was crowned king of Bosnia. He proved an uncompromising Roman Catholic, and the Inquisition was soon busy persecuting the Paterenes who were protected by Stephen Cossaccia the Duke of St. Saba, or Herzegovina and the chief dependent of the Bosnian crown. The Manichæan Paterenes in their distress turned, as their brothers had turned in Serbia, to the Turks, and invited them to come in. Thus was enacted another part in that fierce drama where Christians hated one another so cordially that they turned eagerly to the infidel to rid them of their rivals. Stephen Thomas, we are told, purchased an ignominious peace at the price of a tribute of 24,000 ducats a year. He afterwards, when the weight of the Turkish heel became intolerable, implored the assistance of the Western Powers, of the Pope, the King of Arragon, the Duke of Venice, the Duke of Burgundy, etc. (*Id.* Evans, lxxiii.) But the days for crusading were gone by; "already," says Mr. Evans, "in 1449, the Turks were settled in the country between the Drina and the Ukrina, and the neighbouring Pashas and Agas began to trade in Bosnian slaves." (*Id.*) At length his people grew weary of their impotent king, and Stephen Thomas was assassinated, "if report speaks truly by, his step-brother Radivoj and his illegitimate son Stephen." He, like his father, was an uncompromising Roman Catholic, and drove 40,000 Paterenes from the country. But there still remained behind a preponderating number of these sturdy sectaries, who "by the mouth of their spiritual chiefs, negotiated the transfer of their allegiance to the Sultan, and he agreed to allow them free toleration in religious matters, freedom from taxation, and other privileges." (*Id.* lxxvii.) In 1463, the Sultan Muhammed entered the country with a large force, and appeared before Bobovac, the ancient seat of the Bosnian bans and kings. Its governor was a Paterene and opened the gates of the city. The king fled first to Jaycze and then to Clissa on the coast of Primoria, where after a siege of forty days he surrendered. (*Id.* lxxviii.) The other towns of Bosnia speedily gave in, and we are told that in eight days seventy cities opened their gates to the Turks. The latter now put Stephen Tomasevic to death, "the most eminent nobles who had not fled to Dalmatia, were transported to Asia: 30,000 of the picked youth of Bosnia were taken to recruit the janissaries; and 200,000 of the inhabitants were sold as slaves."

(*Id.*) The Hungarians shortly after this succeeded in recovering a part of Bosnia, but they had to surrender it again, and in 1527, the whole country, as far as the Save, passed finally under the domination of the Turks. (*Id.*, lxxxvii.) The change was not an unwelcome one to the peoples, for "the rule of the Moslem was looked upon as less oppressive than that of the petty Christian bans and barons." (*Id.*) The Turks now offered to allow all those who would abjure their religion and accept Islam to retain their lands. The Paterenes seem to have accepted these terms almost universally, and as Mr. Evans says, we may perhaps suspect that the Manichæism which looked on Christ as one Æon might accept Muhammed as another. (*Id.* lxxxix). Thus came about the strange revolution by which a Slavic race became uncompromising Muhammedans, for as is very familiar to all students, the amount of Turkish blood in Bosnia and the Herzegovina is very slight indeed, and confined, as Mr. Evans says, to a few officials and a part of the soldiery. The Muhammedans there are of the same race precisely as the Christians, speak the same Serbian dialect, and trace back their title-deeds as far. (*Id.* xci.) They form a third of the population. The other two-thirds are divided in allegiance between the Greek and Latin Churches. The former have been largely recruited by immigrants from Serbia, while the latter have correspondingly decreased by emigration into Dalmatia, Croatia, and Slavonia. The landowning class, the gentry, and those who have the skill and the traditions of government are, as I have said, Muhammedans. A feudal aristocracy, "till within the last few years they were still living in the castles built by their Christian ancestors, they kept their old escutcheons, their Slavonic family names, their rolls and patents of nobility inherited from Christian kings. They led forth their retainers as of old under their baronial banners, and continued to indulge in the chivalrous pastime of hawking. The common people, on the other hand, have clung to their old Slavonic institutions, their sworn brotherhoods, their village communities, their house fathers; and have paid and pay still, the same feudal dues to their Muhammedan lords as they did to their Christian ancestors." (*Id.* xcii.)

Having traced out cursorily the history of Bosnia, let us turn for a short space to that of its old dependency, Herzegovina.

The Herzegovina formed the ancient Zupa of Zachluma, which was incorporated with Bosnia by the Ban Stephen in 1326. It was granted as a fief to a brave general of Stephen's named Vlatko Hranic who having transferred his allegiance to the Emperor Frederick the Fourth, was in 1440 given the style of duke (Herzog) whence his country got the name of Herzegovina which is merely the adjectival form of Herzega, the

Slavic corruption of Herzog. It includes the maritime districts of Serbia from Ragusa to the Cettina, to which were afterwards added Castelnuovo, Hisaur and other places on the Gulf of Cattaro. Its capital was Mostar. I shall not tell its story, which is closely twined with that of Bosnia, in detail, but, as before, merely relate its concluding incidents. In 1466 died Stephen Cosaccia, the duke of Herzegovina, and his heritage was shared by his sons Ladislaf and Vlatko. In 1483 the Beglerbeg of Bosnia invaded the duchy, expelled the two princes, and incorporated their dominions in the Sandjakat of Bosnia (Wilkinson, *op. cit.*, ii, 96 and 97.) Stephen's son Stephen, who had been sent as a hostage to the Porte, became a renegade, took the name of Ahmed Pasha and rose to be Grand Vizier. He is known to the Turks as Herzekoglu, *i.e.*, the Duke's son, (Evans, lxxxi.) The Venetians after many struggles, conquered the coast district of Primoria and by the peace of Carlovitz in 1699, the Herzegovinian towns of Citluk, Gabella, Cattaro, Castelnuovo and Risano with Knin, and Zeng and other places were left in the hands of the Venetians, the only remaining strips of Herzegovinian coastland left to the Turks being the narrow enclaves of Klek and Sutorina (*Id.* lxxxi, 1, note 2.) From the Venetians, who held sway here so long, they passed to the house of Austria, and we find in this ancient possession an explanation of the longing eyes which Italians are supposed to be now casting across the Adriatic. The inland districts of Herzegovina remain Turkish to this day. The condition of things socially in Herzegovina is very much the same as in Bosnia, except that the Muhammedan aristocracy is not relatively so numerous.

We have now traced the crooked history of the various fragments of the Serbian stock, and will conclude with some details about the topography of the Serbian land chiefly taken from the work of Schafarik. I have mentioned that the emperor Constantine tells us Serbia was divided into seven districts or zupas; one of them was distinctively known as Serbia.

The frontiers of Serbia properly so called were, according to the emperor Constantine, as follows: the Save bounded it on the north, on the west the mountain chain dividing the valleys of the Bosna and the Urbas and further north the chain between the Urbas and the Rama; thence the boundary continued through the Duwnanian plains as far as the Imota Lake, and thence to the mouth of the Zetina. In the south-west the Serbian islands were washed by the Adriatic; in the south-east Serbia was bounded by the mountains which stretch from Antivari (Bar) to the Lake of Scutari and from the River Drimez to the Plawno Lake; the Ibar and the Morawa apparently separated the Serbs

from the Bulgarians. It would seem that the land east of the Ibar on the Topliza on the Blue Morawa and the Tempeschka (*i.e.*, the ancient Dardania), was first colonized by the Bulgarians and only became attached to the Serbian kingdom in the time of Stephen Nemanya and his successors, and thus it came about that the Serbian dialect afterwards prevailed there. (Schafarik, ii, 258 and 259.)

The Serbian land proper was in later times divided into two districts, namely Serbia and Rascia. The latter formed a separate zupa, which occupies a notable place in Serbian history. This zupa took its name doubtless from the River Raschka, otherwise called the Rasina which flowed through it, and its capital was Rasa, the modern Novi Bazar on that river. It was probably the Rase of Constantine Porphyrogenitus who tells us Muntimir's sons took refuge there in the year 870. (Stritter, ii, 155). Kinnamos, the historian, mentions a fortress of Rason in the years 1122 and 1153, which, however, according to Schafarik, is more probably to be identified with the modern Razan on the Nischawa (*op. cit.*, ii, 261.) The zupa of Rascia formed the South Western portion of Serbia Proper and from it the Serbians were sometimes called Rasawe or Rassiani, in Magyar Ratz, in German Ratzen.

Within these limits Constantine mentions six towns whose sites are not clearly to be traced. 1. Destinika, the Serbian capital. This was not Trstenit as many suppose, but rather Desnitza which under the form Thysnitza is mentioned in a deed of the emperor Sigismund in 1426. Its site is probably to be sought on the Lower Drina, where the villages of Desit and Desna still remain. (*Id.* 260.) 2. Tzernabuskei, whose situation is unknown. There are several hamlets called Bucji in Serbia and a place called Bielabuca on the Trawnik in Bosnia. 3. Meigyretus perhaps the modern Medjurjrec in Yagodina. 4. Dresneik, probably the modern Dreznik in the district of Uzizk. 5. Lesnik, the modern Ljeschnitza on the Yadar. 6. Salines, now Solina (Turkish Tuzla from Tuz, Salt), a small town still existing on the Yala, a tributary of the Bosna called Sallis by Ptolemy, and Salde in the Peutingerian table. (Schafarik, ii, 261.)

Mediaeval historians add several names to those given by Constantine. Thus Semberiya, which still designates the district enclosed at the point where the Save and Drina meet one another. This district was called Sumbra by the anonymous priest of Dioklea and Subria in the Dalmatian Chronicle. East of Semberiya and on the right bank of the Drina was the district of Matschwa, which in the 13th century was made into a banat, "Banatus Machoviensis." (Schafarik, ii, 262.) On the river Lugomira, which falls into the Morawa, on the left below

Tiupriya, was a district called Lugomira, in the 12th and 13th centuries, and which still retains that name. (*Id.*) Kinnamos also mentions in the year 1153 a fortress of Galitch, captured by Manoel Komnenos, now in ruins. In 1162 he mentions a town, Desæ Vallum, probably the modern Tyesica, not far from Bulowan and Nisch; and in 1154 a town of Setzeniza, probably the modern Sienitza on the Wuwaz. Budimel, named as an important town in 1165, was situated in the south-west of Serbia.

The zupa or province of Zakhlum was so called, as the Emperor Constantine tells us, from being situated behind the Mountain Khlum and is a name formed like Zavolok, Zavolga, etc.; it stretched from Ragusa, in the south-east, as far as the Neretwa or Kraina in the north-west. On the east it was bounded by the mountain range separating the valleys of the Neretwa and the Drina. This range divided Zakhlum from Serbia Proper. Its neighbour on the north was Croatia and on the south Terwunia. (Schafarik, ii, 263.) Within its limits several towns are mentioned by the Greeks, whose sites, however, are not well ascertained. The position of Khlum, its principal town, is not known. Constantine says both it and Buna were placed on a mountain behind the river Bona; the Boona is a tributary of the Naretwa, and I find a place called Boona close to the junction of the two rivers. Khlum may be represented by the adjoining town of Blagai. The other towns of Zakhlum mentioned by the Emperor are—Stagnum, now called Ston, in Italian, Stagno, on the isthmus joining the peninsula of Sabioncello to the main land, Mokriskik, whose site is unknown; Yosli now Oslye, a place east of Ston in the Herzegovina; (Schafarik, *loc. cit.*); Galumainik, the modern Glumnik, in the district of Ragusa; Dobriskik the modern Dabar at the sources of the Wukostah, south-east of Liubin. (*Id.*) The narrative of the priest Diokleas compiled in the year 970 (Bohucz, *op. cit.*, 121), gives us some more facts about this district; he calls Zakhlum Podgoria, and divides it into nine gaus; Onogost, whose name survives in a small town on a lake near Niksit; Moratsha, at the sources of the river of the same name; Komerniza, on the Piwa, a tributary of the Tara; Geriko or Gaza, the modern Gačko; Netusini, *i.e.*, Newesin, a small town on the river of the same name; Guisemo, whose site is unknown: Neret, the land on the Upper Neretwa and Rama, the land on the river of the same name. The sea-board of Zakhlum with the enclosed portion of the land of the Neretshani is called Cherenania, *i.e.*, Kraina by Diokleas. He names the following gaus in this district Stantania (*i.e.*, Ston). The valley Popowo, through which according to Lucius and Farlati the Zakhluma flows. Yabsko (probably Yabiza or

Zabiza) Lucca, *i.e.*, Luka, which was afterwards famous, Schafarik says its site is unknown, but I find a place, Papavo Lucca on the peninsula of Sabioncella; Velliza (? Briesta on the same peninsula), Gorymita (site unknown), Dubrawa (ditto), and Debro, the modern Dabar. (Schafarik, ii, 265.)

At the time of the migration of the Serbians the district of Zakhlum had been devastated and depopulated by the Avars. It was then settled by a colony of Serbs. It is unknown when they began to have a separate line of princes. From 912 to 926 there reigned in Zakhlum a prince called Michel Bouseboutzes, *i.e.*, Michael, the son of Wyschewit. In 912 he made prisoner a Venetian prince who was returning from Byzantium, and sent him to Simeon, the Bulgarian king (Schafarik, ii, 255-256), and in 916 we find him informing the latter of the attitude of the Greeks, and inciting him to punish their ally, the Grand Zupan of Serbia. (Stritter, ii, 407.) Later he seems to have been on better terms with the empire, as he was nominated proconsul and patrician by Constantine, which titles were only conferred on friendly princes. Lupus Protospatha styles him, improperly, king. Pope John the Tenth wrote him a letter as well as to the Croatian Prince Tomislaf, urging him to adopt the Latin instead of the Slav language in the services of the Church, a proof of the consideration he enjoyed abroad. (Schafarik, ii, 256.) The Zupan of Zakhlum was styled Archon by the Greeks. (*Id.*)

North of the Zakhлумi dwelt the Neretshani or Pagani. Their country, according to Constantine, extended from the Neretwa (whence they derived one of their names) to the Zetina. It contained three zupas or gaus, Rastotza, Mokron, and Dalen. The two former were situated on the coast and their inhabitants were engaged in fishing. The third gau was inland and its people were agriculturists. They also had four islands off the coast, namely, Meleta (the modern Meleda), Curcura (*i.e.*, Cuzola formerly called Corcyra Nigra), Bartzo (*i.e.*, Brazza), and Pharos (which still retains its name). These islands were very beautiful and fertile, and contained many deserted towns and marshes (paludes ? meadows) where they fed their cattle. (Stritter, ii, 414.)

There were other islands which did not belong to them but were subject to the Greeks, as Choara (? Curzola), Jes (Lissa or Issa), and Lastobon (Lagosta).

According to Constantine this zupa derived its name of Paganania from the fact that its people remained Pagans after the other Serbs had been converted to Christianity. (*Id.*, ii, 411-412.) The zupa of Rastotza or Rastok took its name from the little lake of Rastok, south of the town of Makarska. The gau

of Mokron lay north of this and took its name from the same town of Makarska, which was then called Mokro; on the north it was conterminous with Croatia. The inland gau of Dalen connoted the district, which also bore the name of Dlmen or Dlmeno, and which is now called Dubno or Duvno, and forms a part of the Herzegovina. In Roman times it was called Dalminium or Delimium, and contained a town of the same name. Thence were derived the general names of Dalmatia and Dalmatæ.

In the Gau of Raztoki is the town of Ostrog, mentioned by Constantine and still called Yaostrog. It is situated on the coast, near Makarzka, between the sea and Lake Yezero. The site of Labinez, another of the towns named by Constantine, is not exactly known. Fortis places it at the ruins near the village of Gradetz. Makron, a third town mentioned by him, is the modern Makarska, while the fourth one named, Berulia, or Wrulya, is a place on the coast between Omisch and Makarska.

The Neretshani, as I have said, remained pagans after their brethren had been converted, and their position on the coast, and their skill as fishermen, soon made them a prosperous community. They seem to have engaged constantly in piracy and were a terror to their neighbours, making the Roman inhabitants of the coast islands their special victims, and we are told that they attempted to invade the mainland of Croatia, but were prevented settling there by the Croats. (Stritter, ii, 414). In the year 820, the Neretshani attacked the Doge Johannes Participatius on the sea, and forced him to make a peace with them, by which he apparently agreed to pay them black mail. The Doge Tradoniko renewed the pact with Drosaik, who was doubtless their Zupan. Notwithstanding this, they made fresh attacks on the Venetian borders under their leaders Uneslaf and Diodur (the last of which is probably a corrupt name), plundered Kaorle, and made the Venetian ships in the harbour pay a large tribute. They landed on the coast and carried off much booty. They also wounded the Doge Tradoniko himself in a sea fight. This was in 840. They waylaid a messenger of Pope Hadrian, who was on his way home from the Synod of Constantinople, and the acts of the synod fell into their hands. This was in 869-870. The Doge Ursus Participatius fought without success against them. Nor did they spare their own relatives, for when in 868 the Zakh lumi, Terwuni, Kanali, Ragusans and Croats went to Bari to aid the Emperor Basil against the Saracens, the Neretshani fell on their lands and devastated them cruelly. This did not, however, hinder them from intercourse of another kind, for the emperor Constantine describes how the Croat ships frequented their ports. In the year 917 we find the

Neretshani subject to the Grand Zupan Peter, but they no doubt again became free in later days. In 932 and 948 their depredations caused much trouble at Venice. (Schafarik ii, 269.) They were apparently in alliance with the citizens of Ragusa, and we are told that Vito Bobali, a leading Ragusan, left his native city with others to offer his services to Muiris prince of the Neretshani (Wilkinson, i, 280), who feared the ambitious views of Venice on the Dalmatian coast. (Wilkinson, i, 286.) The Doge Pietro Kandiano the Third sent two fleets against them, but they effected nothing, their position and the friendly alliance of the Croats making them too powerful. But their continual piracies having aroused against them their various neighbours, the Doge Pietro Orseolo the Second set sail with a formidable fleet in the spring of 997, determined to crush them. He was welcomed with great joy by the citizens of Trieste, Capo d'Istria, Pirano, Isola, Albona, Rovigno, and other towns of Istria, and then went on to Dalmatia. Leaving Zara, the Venetians proceeded to attack the Neretshani. Forty of their principal merchants were captured in a ship, while attempting to reach Ragusa from Puglia. They were assailed in their fortresses and defeated on all points. The islands of Lesina, Meleda, Curzola, and Lagosta, which they had strongly fortified, were taken, and the victorious fleet having returned to Trau, the Doge received there the submission of those of the Neretshani who had escaped the slaughter. They engaged to exact no more tribute on the sea, to burn their large boats, to indemnify the Venetian merchants for their captured cargoes, to send six hostages to the Doge, and to abstain for the future from all acts of piracy." (Wilkinson, *op. cit.*, ii, 226.) The Neretshani were thus effectually crushed: a remnant only, says Wilkinson, was found in later times among the pirates of Almissa and the subjects of the house of Kacich, who ravaged the Adriatic in the 12th and following centuries, and they were not finally conquered by the Venetians till the arrival of the Turks in Bosnia. (*Id.*, 226.)

Terwunia or Kanalia, according to Constantine, extended from Ragusa in the north to Cattaro in the south; on the west it was bounded by the Adriatic, and on the east by Serbia Proper. Its chief towns as named by him were Terwunia, the modern Trebinya in the Herzegovina; Risena the modern Risano in the Gulf of Cattaro; Hormos, probably Hirona, north of Resano, Lukavete, now called Zuka near Tuhel: and Zetlewe, probably Zeta, on the river of that name. According to Diokleas Terwunia at the end of the 10th century contained the following gaus: Libomir (a mountain Liubomir still remains); Vetanitzia whose site is unknown; Rudina (a place, Rudine under the mountain Liubomir is still known); Kruzewica (doubtless Krushe, in

Montenegro); Urmo, the Hormos of Constantine; Ressena, *i.e.*, Risan; Dracevitza, either Dratschewo near Trebuye and Slan, or Drakowittza, a castle between Cattaro and Ragusa; Canali, *i.e.*, Kanawlie, a small district stretching from Epidaurus (Ragusa Vecchia), along the coast of the gulf of Cattaro, which was so called down to the 18th century; and lastly, Gernovitza, whose site is not known. Terwunia itself, according to Schafarik, is not a Slavic name. He deems it a corruption of the Illyric Latin Travunia, *i.e.*, trans. *βουνο*, and a name of the same genus as Tramontana, *etc.*, while Kanalia, which Constantine derives from Kolnitztza (*ciā plaustrī*) was no doubt derived, as Stritter says, from the famous aqueduct (canal) which supplied Epidaurus with water, of which ruins with Roman inscriptions still remain. (Stritter, ii, 409). Ragusa, the Emperor tells us, was on the confines of the Zachlumi and the Terwuni, and paid tribute to the princes of both; the citizens had vineyards in either district. (Stritter, ii, 407 and 409.)

The later historians of Ragusa, who are not of much authority, mention an attack by the Terwuni on Epidaurus about 640–650, of their alliance with the Saracens, and the destruction of Epidaurus by the two combined in 656.

The Zupans of Terwunia acquired a temporary independence in the first half of the 9th century, when we read that the Grand Zupan Wlastimir gave his daughter in marriage to Kranian the son of Bela, Zupan of Terwunia, gave him the title of prince, and released him from his jurisdiction. (Stritter, ii, 408.) About this time we read that the citizens of Ragusa gained a victory over the people of Terwunia and Zakhlum, and in 831 they obtained considerable advantages by a treaty made with the chief of Terwunia. (Wilkinson, *op. cit.*, i, 278.) Kranian was succeeded by his son Phalimer, and he by his son Tzutzimir. (Stritter, *id.*) It would seem they afterwards lost their independence, for the Emperor Constantine makes the Terwunians subordinate to the Grand Zupans. (*Id.*)

Having surveyed the topography of Serbia Proper we will now turn to the other zupas or gaus into which the land was divided in the time of Constantine, and begin with the most southern. This was called Dioklea by the Greeks and Romans, and by the Serbians Duklia, and in later times Zenta or Zeta. It comprised the southern part of the modern Montenegro and a portion of Northern Albania. Constantine has made a curious blunder about the origin of the name. He tells us it was so called from a city built by Diocletian, while the fact is that Diocletian took his name from his own mother city. It was an ancient city, was called Doklea by Ptolemy and Dioklea by Aurelius Victor. Pliny speaks of a people whom he calls

Docleatæ. The Serbs called it Dukla, and it is curious that the Ruthenians, north of the Carpathians, also had a town called Dukla. It was devastated in the 10th century by the Bulgarians, but revived, for Kinnamos in describing its capture, by John Ducas in 1162, calls it a very famous town. King Milutin assigned it as the residence of his blinded son, Stephen, in 1317. It was situated at the outfall of the river Zeta into the Moratsha, and its ruins are still called Dukliangrad; from them was built the later town of Podgoritza. (Schafarik, ii, 273.) The sites of the other towns of the district mentioned by Constantine are not so certain, Gradeta is probably the modern Gradit, above Scutari. Nugrade is perhaps Gradatz in Montenegro. Lonto is called Lunta and Luncza on old maps, and Linda on modern ones, and is north-east of Scutari. The monk, Diokleas, calls the district of Dioklea, Zenta or Zeta, a name derived no doubt from the river Zeta. He tells us it contained nine gaus. Lusca probably the modern Nahiya Lieshanska. Padlugia whose site is unknown. Gorska, also unknown. Eupelnik ditto. Obliquit, the modern Oblatshit. Propartna, now Papratnitza in Lieshanka. Kremeniza also unknown, but reminding one of a Gallician town. Budua the modern Badua, near the coast. Kuzewa, perhaps Kutie or Kutisti in Montenegro, and Gripuli, probably Krtoli, near Cattaro. From the position of these towns it would seem that Dioklea was separated from Terwunia by the gulf of Cattaro and the mountains which separate Grahovo from Bielitza; from Albania by the River Drimza, and a line drawn from Scutari to Antivari on the sea; from Servia by Raskkian mountains beyond the lake of Plawno, and from Zakhiluma by the mountains at the sources of the Moratsha.

Besides the towns above named there were others of some fame in early times within the district; thus Budimal on the Moratsha where the village of Budina still remains, Scutari the Skodra of the Romans, Cattaro the Dekatera of Constantine, which was ravaged by the Saracens in 867. The Albanian towns of Antivari, Ulcin, Lesch, and Daratsh were also largely peopled at one time by immigrants from the neighbouring Dioklea. (*Id.*, 274-5.)

I have now completed a hurried survey of the Southern Serbs, and the main points which I wish to emphasize are, first, that amidst the disjointed and disintegrated history of these parts, and beneath a seeming variety of names, Croats, Bosnians, Montenegrins, Herzegovinians, etc., we have in fact but one race, with one origin; namely, the great Serbian stock. Secondly, that this race first migrated to the south of the Danube and the Save and occupied its present country at the

beginning of the 7th century; thirdly, that like other Slavic races its leaders were probably of another stock, belonging, in this case, to the great Alanic family, and that it was from these leaders that the Serbs received their name; and lastly, that the main body of the race is of the same stock as the Ruthenians of Galicia and its borders. By pushing the Serbs out of their present country and remitting them to the north of the Carpathians we, *pro tanto*, simplify very greatly the ethnographic map of Europe in early times. Our next paper will deal with another line of migration from the same district, which tended westwards and northwards, and we shall treat of the Sorabians, or Northern Serbs, and the Obotriti.

ANTHROPOLOGICAL MISCELLANEA.

BIRD-SHAPED MOUNDS IN PUTNAM COUNTY, GEORGIA, U.S.A.

The existence of curious earth-works in the southern counties of Wisconsin was noted by Mr. Lapham in 1836. Subsequently an interesting account of these animals and bird-shaped mounds was published under the auspices of the Smithsonian Institution. They were quite numerous along the great Indian trail or war-path from Lake Michigan, near Milwaukie, to the Mississippi above the Prairie du Chien. Generally representing men, buffaloes, elks, bears, otters, wolves, raccoons, birds, serpents, lizards, turtles and frogs, in some instances they typify inanimate objects, such as bows and arrows, crosses and tobacco pipes. While the outlines of not a few had been seriously impaired, others in a spirited and correct manner declared the objects of their imitation. Constructed of earth, they varied in height from six inches to seven feet. In certain localities the animals were delineated, not in relief, but in intaglio; by excavations and not by elevations.

Two *animal mounds* have been observed in Ohio. On an elevated spur of land near Granville is an earth-work known in the neighbourhood as the *Alligator*. Its total length is two hundred and fifty feet. The head and body, four sprawling legs and a curled tail, were clearly defined. Its breadth of body was forty feet, and its length of legs thirty-six. Four feet expressed the average height, while of the shoulders the mound attained an elevation of six feet. It was manifestly the effort of the primitive workmen to preserve the proportions of the reptile.

Situated on a ridge rising one hundred and fifty feet above Brush creek, in Adams county, is still a more remarkable structure, which, from its configuration, has received the appellation of the *Great Serpent*. "Conforming to the curve of the hill, and occupying its very summit, is the serpent—its head resting near the point and its body winding back for seven hundred feet in graceful undulations, terminating in a triple coil at the tail." If extended, its entire length would be not less than one thousand feet. The embankment is upwards of five feet high, with a base diameter of thirty feet at the centre of the body, whence it diminishes somewhat toward the head and tail. "The neck of the serpent is stretched out and slightly curved, and its mouth is opened wide, as if in the act of swallowing or ejecting an oval figure which rests partially within the distended jaws."

When and by whom these remarkable tumuli were built is not known. The object of their construction is equally a matter of conjecture.

It has been supposed that these animal and bird-shaped mounds existed only in Wisconsin, and in perhaps a few other localities in the West. Our recent observations, however, prove that such is not the fact, and show that the primitive dwellers in the South have left similar traces of their early constructive skill.

Six miles and a half north of Eatonton, in Putnam county, Georgia, on the plantation owned by the heirs of the late I. H. Scott, Esq., may now be seen a *bird-shaped mound* of definite configuration and marked proportions. Located in the midst of a beautiful wood, and crowning a high ridge on the head waters of Little Glady Creek, it is composed of boulders of white quartz rock gathered from the adjacent territory. Most of these boulders are of such size that they could have been transported by a single individual. For the removal of others the strength of two or three persons would have been required. *This rock mound is eagle-shaped.* It represents that bird lying upon its back with extended wings. The head is extended towards the East. In the construction of

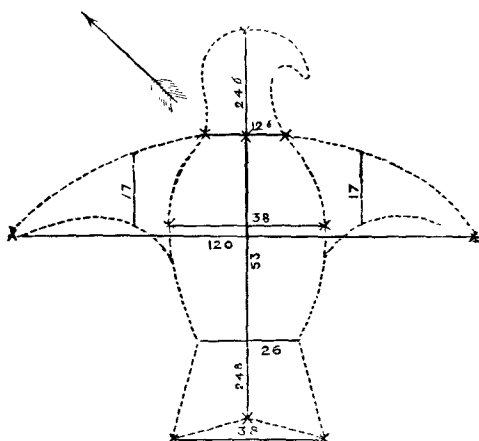


FIG. 1.

this tumulus careful respect was had to the object imitated; the height of the mound at the breast of the bird being between seven and eight feet, its altitude thence decreasing toward the head and beak, where it is not more than two feet and a half high, and also towards the extremity of the wings and tail, where it possesses an elevation of scarcely two feet. The beak is decidedly aquiline, and the tail is indented. Measured from the top of the head to the extremity of the tail, this mound is one hundred and two feet long. From tip to tip of the wings, measured across the body, we have a

distance of one hundred and twenty feet. The greatest expanse of tail is thirty-eight feet. Equally great is the lateral diameter of the body of the bird. The proportions of the head, neck, wings and tail are well preserved. That the tumulus was designed to typify an eagle we think may safely be affirmed, and this monument will be acknowledged as possessing unusual interest. Surrounded by primeval forests, and composed of most durable material, it is evidently of no inconsiderable antiquity. If undisturbed it will maintain its integrity for an indefinite period.

By some curious persons an attempt was made, years ago, to pry into the secrets of this mound. A partial opening was effected in the breast, but with what result we could not learn.

It excites no surprise that the eagle should have been selected in ancient times as a symbol of all that was swift, powerful, watchful, daring and noble. Of its feathers was the battle flag of the Creeks composed. Their council lodges were surmounted with carved images or stuffed skins of this regal bird. None among the Cherokees, save an approved warrior, was permitted to wear its plumes. To this king of the feathered tribe were religious honours paid by the Natchez. With them its feathers were recognized not simply as ornaments and trophies, but as marks of dignity and insignia of uncommon worth. No wonder, then, that among these aborigines this bird should have stood as a symbol of strength and honour, and that he who bore the stoutest heart, the quickest eye and the strongest arm should have been hailed as the eagle of his nation. Whether or not this tumulus was erected in commemoration of some such distinguished personage, or in perpetuation of the estimation in which the bird which it symbolizes was held, or what the precise nature and purpose of this imitative mound, we know not. There is no clear light to dispel the uncertain shadows which rest upon it. No lettered shaft tells the story, and among the stone fragments composing this monument, we search in vain for a single inscribed tablet. The people who built it lived and died without letters, and the muse of history furnishes not even an epitaph for their tombs.

About a mile and a half from Lawrence's Ferry, on the Oconee river, and situated on a stony ridge near the main road, on the plantation of Mr. Kinchen D. Little, in Putnam county, is another of these bird-shaped mounds. Like the former, it is composed of boulders of white quartz rock collected from the surface of the circumjacent hill. Its dimensions do not materially differ from those of the tumulus on the Scott place. The tail, however, is bifurcated. The head of the bird lies to south-east, and its wings are extended in the direction of the north-east and south-west. The entire length of the structure from the crown of the head to the end of the tail is one hundred and two feet and three inches. For a distance of twelve feet the tail is bifurcated, and just above the point of bifurcation it is twelve feet wide. Across the body and from tip to tip of the wings the tape gave us an admeasurement of one hundred and thirty-two feet. The body of this bird—which

is evidently represented as lying upon its back—is stouter than that of the eagle, being seventy-six feet in diameter. Its wings are relatively shorter. The proportions of the head, neck and tail are

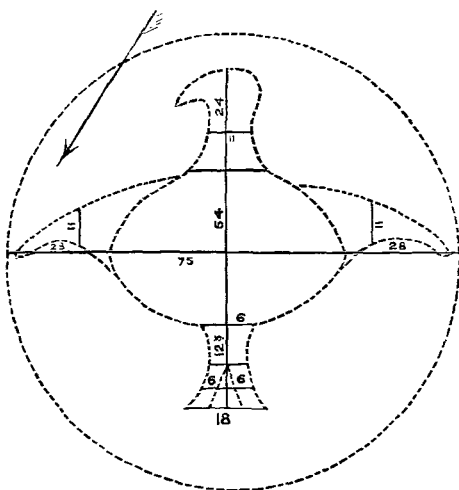


FIG. 2.

tolerably well observed. What particular bird this tumulus is designed to typify we cannot certainly state. It seems probable that some variety of the falcon tribe is intended. The altitude at the breast is about five feet, and from that point the mound tapers to the head and tail, which are some two feet high. At the tips of the wings, which are rather short and quite curved in their outline the height is not more than a foot and a half. The ridge upon which this structure rests have never been cleared. Surrounding this tumulus is an enclosure of rocks similar to those of which the mound is built. This stone circle is symmetrical in outline, and at its nearest approach passes within a few feet of the tips of the wings. By it is the mound completely isolated.

Crowning the elevated ridges by which this county is traversed, are occasional circular rock mounds of artificial origin. Usually from four to eight feet high, and with base diameters of thirty or forty feet, they are composed of the loose boulders so common in the region. Some have been opened, and from them have been taken human bones and relics of various sorts. Manifestly such are grave-mounds—it being easier in this rocky neighbourhood to heap these stone piles above, than to cover the dead with earth. Of this class of tumuli we instance one on the plantation of Dr. J. T. De Jarnette, twelve miles from Eatonton and about one mile from the Oconee river, and a similar structure on the land of Captain A. S. Reid, four miles from Eatonton and near Little river.

It was intimated by some of the early observers that tumuli of

this description were not infrequently temporary in their character, and designed as a protection to the dead, who perished away from their homes, until such time as they could be conveniently removed and carried back for interment in the established burial grounds of the tribe or community of which the deceased were members. While it may be true that some of the smaller rock piles, so common in many portions of Upper Georgia, may have originated in this way, we are of opinion that the substantial structures to which we have alluded are permanent in their character and were erected as enduring memorials of the primitive dead of this region. Surely no more permanent monuments could have been devised at that early period.

The location of two clearly marked bird-shaped mounds of firm construction and excellent proportions, within the territory occupied by the Southern tribes, is deeply interesting, and will attract the attention of the student of American archæology.

CHARLES C. JONES, JR.

NOTE.—The dotted lines in the illustrations indicate the configurations of the tumuli. Those surrounding Fig. 2 mark the enclosing stone circle.

ANTHROPOLOGICAL GLEANINGS. Compiled by W. L. DISTANT.

"THE Native Races of the Pacific Ocean," by W. H. Flower, LL.D., F.R.S., &c. *Lecture delivered at the Royal Institute of Great Britain, May 31, 1878.* "The people of the islands belonging to the region known as Oceania or Oceanica are elaborately and exhaustively treated in this lecture "mainly from an anatomical point of view," and in great measure from observations made upon such portions of their bodily frame (chiefly crania) as are preserved in the Museum of the Royal College of Surgeons under the charge of the lecturer. The people of Australia are first considered, and an exhaustive account given of their history since they were first visited by Europeans. Speaking of Captain Cook's visit to Australia, and "the gallant though unsuccessful defence of their native land by two naked savages against a boat's crew of forty armed men," Professor Flower rightly observes: "Certainly no more critical event has ever occurred in the history of any nation, nor combat ever fought attended with such momentous consequences, to one at least of the races engaged, as that which took place in Botany Bay on April 28th, 1770. On that day the fate of the Australian race, which had been for untold ages in undisturbed possession of their native soil, was sealed." The stature of the Australians is inferred from a number of different measurements to be somewhat less than that of Englishmen, whose average as ascertained by Dr. Beddoe is not

very far from 5 feet 6½ inches. "Every Australian cranium yet examined, of either sex, is what Busk calls *phanozygous*, that is to say, in the *norma verticalis*, when held at arm's length and looked at with one eye, both zygomatic arches are seen at the same time." The Tasmanians are then discussed and the account narrated of their known history from discovery to extinction. Prof. Flower observes it is difficult indeed to imagine human beings living in a lower social condition than that of the Aboriginal Tasmanians, and yet the partial education which some of the race underwent before the final extinction, showed that they possessed capacities, intelligence, and moral qualities, by no means inferior to those of many other of the uncivilized races of the world. The crania have the general angular form, prominent median ridge above, and flattened upper parietal region noticed in the Australians, but their special character is a prominence of the parietal eminences, not found in any of the Australian crania, and developed to a greater or less degree in all, and giving a greater latitudinal index. This is even to be seen in the cranium of a young infant, the form of which is characteristically different from that of an Australian child of corresponding age.

The islands which at the present time are either wholly or mainly inhabited by the Melanesian race, are that group lying in the western part of the ocean, not far from the coast of Australia, and joining at their northern extremity to the great island of Papua or New Guinea. Prof. Flower considers it probable that the range of the Melanesian race was at one time more extensive than at present, and that they were settled in the islands where they at present dwell, and also in many others now occupied by Polynesians, before the arrival of the last-named race, who appear in many cases to have supplanted them. The most striking general character of the cranial part of all the skulls examined is their great length and narrowness, the sides being remarkably flat, especially in the posterior parietal region, in this conformation differing totally from the Tasmanians. In no race known does the condition of the pterion differ so greatly from the average of Europeans as the Melanesian. The lecturer dealt with the Negritos and Malays and then passed to the Polynesians, a people found principally in those islands, which, "roughly speaking form a triangle with the Sandwich or Hawaiian group, Easter Island, and New Zealand at the three corners, at a distance of 5,000 miles apart. From the few crania, which unfortunately, are only possessed in the Museum of the Royal College of Surgeons, the following are some of the results stated to have been obtained. They are all phanozygous, but very slightly so and in all their essential features the skulls resemble those of the Malays. They are, however, rather larger, and especially higher; the face is longer and somewhat less prognathous, and the nose is narrower. When a typical Polynesian, as a Samoan cranium, and a typical Melanesian, as one from the New Hebrides, have once been compared and contrasted, they can be recognized at a glance; as they differ quite as much as does the external appearance of the people. In conclusion Prof. Flower gives the great

weight of his experience with reference to the definitions of the terms "race" and "species," and the difficulty in classification. One extract will illustrate this portion. "The various groups of men upon the world, whether originally all straight-haired or all frizzly-haired, must, it has been argued, have separated at some time into two primary divisions, the *Leiotrichi* and the *Ulotrichi* of Bory de St. Vincent, a view to which Professor Huxley is inclined to give much weight. This would be a simple starting-point for our classification. But on examining other characters, some of which seem equally important, difficulties arise. First let us take the case of the Australians. Their general aspect, all their cranial and skeletal characters ally them so closely to the Melanesians, and also to the African negroes, that it is extremely difficult to suppose that so many coincidences could have arisen in two stocks, which had already diverged so far, as to fix permanently the distinctive characteristics of the hair. Again take the Negritos of the Indo-Malayan Archipelago. Here we have a woolly-haired people, with scarcely any of the osteological and perhaps cerebral characteristics of the other negroid races. The alternative supposition that woolly hair could have originated independently, upon different branches of straight-haired races, is also beset with difficulties." A perusal of this Lecture will make all anthropologists anxious for the publication of those series of Anthropological Lectures both past and forthcoming at the Royal College of Surgeons by the same author.

"On the Origin and Migrations of the Polynesian Nation," by the Rev. Dr. Lang, *Journ. and Proc. Roy. Soc. New South Wales*, vol. x. p. 43. 1876. Dr. Lang considers the Polynesians as of Asiatic origin and of Malayan race, separated at a period of the earliest antiquity in the history of Man, and under the operation of causes still in active operation in the Pacific Ocean, and having gradually migrated from the Indian Archipelago, discovering and occupying the numerous islands both North and South, till they reached their farthest east in Easter Island. From there the writer considers that the same causes must have operated in carrying them still farther east across the remaining tract of ocean, from that island to somewhere near Copiapo, in the same latitude in the Republic of Chili and then argues "That from that landing-place they gradually proceeded northwards and eastwards during the numberless ages that have since elapsed; occupying and forming settlements in all eligible localities in their course, first in the Southern and afterwards in the Northern continent of America, as far as the Lakes of Canada and the Coast of Labrador."

"Leprosy, as Observed in the Sandwich Islands" by Frank H. Enders, M.D. *Transactions of the International Medical Congress of Philadelphia*, 1876 p. 717. Dr. Enders states that the history of leprosy as it exists on these islands is yet very obscure. Among the inhabitants of the present generation it is known as *mai-pake*

(Chinese sickness) it being contended that the first case ever known there was in a Chinaman. The older class of natives formerly knew it under the name of *mai-ali* (sickness of chiefs). Some of the elder foreigners however who have resided there before the importation of the Chinese recognise the disease, or one closely resembling it, as far back as the year 1830. The author considers the question to be solved is "whether it is a disease *sui generis*, or some form of syphilis peculiar to the climate and dependent, to at least some extent, upon the habits and diet of the people." One great difficulty in the solution of the problem is that "almost every native either has, or has had syphilis, acquired or inherited." The Leprosy does not appear to be more frequent in one sex than in the other. The disease is confined almost exclusively to the native population, but has been observed by Dr. Enders in fifteen cases among Mongolians, and four among Europeans, the latter however being males of the lower order, living entirely with the natives, eating *poi* and salt fish, and sleeping in overcrowded filthy huts. Most cases of the disease are found where prostitution is rife. In conclusion, despite testimony to the contrary, the writer does not consider that leprosy is a disease *sui generis*, but only an offspring of syphilis.

"Marquesan Tradition of the Deluge," by J. Linton Palmer. *Proc. Literary and Philosoph. Soc. of Liverpool*, vol. xxxi. p. 271. 1877. This paper is elaborately prefaced by a description of the Marquesas Islands, their inhabitants and Customs. "Marriage is a very voluntary affair and they couple and separate when they will." Circumcision is a religious ceremony and takes place at nine years of age. The men are described as being rarely above five feet ten inches in height, and well formed, though rather slender limbed as a rule; the women are much smaller in proportion than the men. The Deluge Legend was copied from the dictation of Thos. C. Lawson, an Englishman, mate of a whaler, which he left in 1843, and who had been in the various islands some twenty-four years. He had heard these chants constantly among the people, by whom they have been transmitted orally for many generations. He copied them from the dictation of the oldest chiefs and people, but does not remember to have ever seen any picture writing or hieroglyphic used. Mr. Palmer describes the legend as having many points in common with the account of the same event as preserved by the Chaldæans and Hebrews.

"On the Nyassa and a Journey from the North End to Zanzibar" by H. B. Cotterill. *Proc. Roy. Geograph. Soc.* vol. xxii. p. 233. 1878. "The Nyassa women have often long, well-shaped faces, but they are all deformed by the hideous '*pelelelé*' (lip-ring) which is worn here of great size; white or yellow stone is the common material, but sometimes they are made of metal, and in that case are generally hollow—in fact like a small tin pannikin." At Malisaka, a village of the Wachungu, the people are described as being totally naked,

"though some vague traditional sense of shame seems to linger amongst them. for they sometimes hung a banana leaf or a bunch of grass from their waists, and one man appeared with a scanty bit of fish-net as his only apparel, which was not very effective." The Wachunga of the Chómbaka Valley inhabit circular huts "beautifully built with bamboo, or wood, and oval bricks of sun-baked clay. They have very pointed, neatly thatched roofs, and the walls slope outwards, giving the hut the appearance of a beehive."

"The Population, Prospects and Future Government of the Transvaal," by G. Pigot Moodie, F.R.G.S. *Journ. Roy. United Ser. Inst.* vol. xxii. p. 583. 1878. In this elaborate paper on the above subject, one remark is well worthy of consideration "The Boer has a contempt for the heathen worthy of the Israelite of old; he almost denies him the possession of a soul, and tells him that the skin he wears is too good to cover him, and yet whether it is owing to his spirit of contradiction—to his imitative nature—or whatever the cause may be, it is among these alone, of all the South African tribes, that the native encourages and supports the missionary, and with the creed affects the clothing, habits, and even language of his civilized invader."

"On the Hill Canton of Sálár—the most Easterly Settlement of the Turk Race," by Robt. B. Shaw. *Journ. Roy. Asiat. Soc.* vol. x, p. 305, 1878. The information about this district and its inhabitants was acquired from some Sálár men who were living in Yárkand during the author's stay there. The Sáláris form the most easterly settlement of the Turk race of which we have any knowledge; isolated among Chinese Mongolians, they have a tradition that their ancestors came from Rúm or Turkey. Their numbers are said to be about 40,000, and they live in villages consisting of scattered farmhouses, each on its own land. Groups of four or five villages are administered by local chiefs called "*Imak*," who again are subordinate to two governors.

"Travels in Western China and on the Borders of Eastern Tibet," by Capt. W. J. Gill, R.E.. *Proc. Roy. Geograph. Soc.*, vol. xxii., p. 255, 1878. Beyond Ouan-Chuan-Hsien is situated the first village of the Mantzu or Barbarians, as the Chinese call them, a word somewhat loosely applied by the Chinese to all the aborigines of this country. Intermarriage goes on between the Chinese and the Mantzu women, but not between the Mantzu and the Chinese women. This, as Capt. Gill remarks, is much the same as in Thibet, where the Chinese are never allowed to take their wives with them. The officials and soldiers therefore, when in Tibet, take to themselves Tibetan wives.

"Dangers from Colour-Blindness," by B. Joy Jeffries, M.D. *Ninth Ann. Report of State Board of Health of Massachusetts*, Jan., 1878, p. 99. Dr. Jeffries concludes that "certainly one in *fifty*, much more probably one in *twenty* of the community is colour-blind in

greater or less degree. This colour-blindness may practically be regarded as *red-green* blindness or *blue-yellow* blindness.

"This defect is congenital. It exists in varying degrees. It is largely hereditary. It may also be temporarily or permanently caused by disease or injury."

"Illyrian Letters." Arthur J. Evans B.A., F.S.A. Longmans, Green and Co. 1878. On visiting the Bosnian Mountains, Mr. Evans became acquainted with the dreadful condition of the refugees who were inhabiting caves in the rocky mountain side. "Strange as it may seem, amidst all this horror and misery, the old Slavonic Zadruga, or family communism, has been preserved. Every cavern has its house-father and house-mother, and they have carried their little constitution underground:" pp. 16—17. "On the Bosnian Croatian Frontier this Zadruga system prevails," p. 41. At Udbina Mr. Evans noticed the practice of "that most sacred and binding of all Slavonic ties—the 'Pobratimstvo' or 'Sworn Brotherhood.'" p. 51.

"Address delivered in the Department of Geology," *British Association, Dublin*, 1878, by John Evans, D.C.L., F.R.S., F.G.S., &c. In discussing the date which is to be assigned to the implement-bearing beds of Palæolithic age in England, Dr. Evans stated that he had always maintained the probability of evidence being found of the existence of Man at an earlier period than that of the post-glacial or quaternary river gravels, but, as in all other cases, it appeared to him desirable, that the evidence brought forward should be thoroughly sifted and all probability of misapprehension removed before it was finally accepted. In the present state of our knowledge, Dr. Evans was not confident that the evidence had arrived at this satisfactory stage.

"Supposed Evidence of the Existence of inter-glacial American Man," by Daniel Wilson, LL.D., F.R.S.E., *Canadian Journ.*, vol. xv., p. 557, 1877. This paper is principally a consideration of a special report of Dr. Charles C. Abbott in the *Report of the Peabody Museum of American Archaeology and Ethnology for 1877*. Dr. Wilson, in conclusion, states that these researches have thus far been carried on with funds appropriated for the purpose by the Board of Trustees of the Peabody Museum of American Archaeology and Ethnology, and the fruits of Dr. Abbott's labours are justly referred to in their annual report as probably the most important result attained in American archæology during the past year.

"A Recent Find of Skulls and Skeletons in Ohio," by the Rev. S. D. Peet, *Davenport Acad. of Nat. Sciences*, vol. ii., p. 138, 1877. These skeletons and skulls were found in a pit or irregular cavity situated on the summit of an elevated gravel bank of the drift period resting on the limestone which there comes to the surface. The skeletons were situated near the surface, from two to four feet

below it, and were found in a variety of attitudes, but the majority of them in a sitting posture. No careful examination of the spot has been made, and no relics found accompanying them. The peculiarity of the skulls, to which attention is drawn, is their remarkably orthocephalic character. They are all distinguished by their peculiar straightness in the occipital protuberance, the height in their frontal sinus, and the elevation of the coronal suture. The point of enquiry is, how can their race affinity be determined by their shape and peculiarities? The sitting position of the skeletons and their situation in a gravel bed, are characteristic of the burial of the later Indians. No mound exists, and no other sign has been discovered of their being mound-builders. On the other hand, narrow dolichocephalic skulls in the collection of the Northern Ohio Historical Society were taken out of a burial mound or tumulus near the banks of Lake Erie. Thus mound-builders' skulls are found in the environments of the later Indians, and the skulls of the later Indians, as supposed, probably Wyandots or Eries in the tumulus of the mound builder. Mr. Peet considers the explanation of the anomaly to be that the spot was a battlefield, although there are no traces of wounds in any of the crania, but their shape and variety preclude the idea that they were deposited in a funeral feast after the manner of the later Indians.

“Notice of a Pre-historic Burial Place with Cruciform Monoliths, near Mungapet in the Nizám's Dominions,” by Wm. King, Depy. Supdt. Geol. Sur. of India. *Journ. As. Soc. Beng.* vol. xlv, p. 179, 1877. (With two Plates.) The place of sepulture described in this paper is situated about eight miles W.S.W. of Mungapet (Paluncha Taluq), on the right bank of the Godávári, and on the road to Hanamconda. The place itself is called by the people around, *Rákshasgudium* or the “village of demons.” The ground occupied is about half a square mile in extent, but Mr. King considers it difficult to be exact as to the area or even as to the number of tombs owing to the thick forest growth; he also had but a few hours at his disposal for searching the place. There are about 150 tombs scattered irregularly along the east and western slope of a low sandstone ridge (lying mainly in a long W.N.W.—E.S.E. group) which is rather thickly covered with kists near the northern edge. In the more crowded portion of this ancient cemetery are four large cruciform monoliths, which taken with the fact of the corpse being placed in a horizontal receptacle, are evidences the writer considers of civilization, possibly of the highest form at which the Kolarian people had arrived when their country was inundated by the great Aryan wave. Mr. King does not consider the cruciform character of these monoliths as showing an early Christian origin, but considers it more probable “that a more refined section of the pre-Aryan people should have had one burial place with special monuments for their greatest families, than that a single early Christian cemetery should have been planted far inland in the centre of heathendom without a trace of the cross

being left in the countries outside." In a postscript Mr. King refers to a paper by Mr. Mulheran, *Proc. As. Beng.*, April and June, 1868, on the same subject.

"The Graves of Heitsi-eibib ; a Chapter on the Pre-historic Hottentot Race," by Doctor Theoph. Hahn. *Cape Monthly Mag.* vol. xvi, p. 257, 1878. The writer refers to a previous statement in the above magazine as to the artificial heaps of stones to be seen in the Kafir country and to the fact that travelling Kafirs may be frequently seen adding one to the number. Dr. Hahn states that this peculiar superstitious act is originally not a Kafir custom, but like many ethnological and linguistic peculiarities has been taken over from the Hottentots. He does not hold that there is any relationship between the Hottentots and old Egyptians to be traced on philological grounds.

THE JOURNAL
OF THE
ANTHROPOLOGICAL INSTITUTE
OF
GREAT BRITAIN AND IRELAND.

APRIL 9TH, 1878.

JOHN EVANS, Esq., D.C.L., F.R.S., *President, in the Chair.*

The minutes of the previous meeting were read and confirmed.

The following presents were announced, and thanks were ordered to be returned to the respective donors for the same:—

FOR THE LIBRARY.

From the EDITOR.—*Revue Internationale des Sciences*, Nos. 13–14, 1878.

From the SOCIETY.—*Proceedings of the Royal Geographical Society*. Vol. XXII, No. 2.

From FRANCIS A. ALLEN Esq.—*Über Hundert fünf und dreissig Papúa—Schädel; Die Kalangs auf Java; Probe der Mafoor'schen sprache; Über die Papuas von Neu-Guinea; Bericht ueber eine reise nach Neu-Guinea; Ueber die Negritos oder aëtas der Philippiner.* By Dr. A. B. Meyer.

From the SOCIETY.—*Transactions of the Geological Society of Glasgow*. Vol. V, Part 2.

From the AUTHOR.—*Die Anthropologischen Sammlungen Deutschlands.* By Prof. Schaaffhausen.

From the ACADEMY.—*Atti della R. Accademia dei Lincei*, Vol. II, No. 3.

From the SOCIETY.—*Bulletin Société Impériale des amis d'histoire Naturelles d'Anthropologie et Ethnographie.* Tome XXVII, Moscow.

From PROF. W. H. FLOWER, F.R.S.—*Sur la Mensuration de la Capacité du Crane ; Etudes sur les propriétés hygéométriques des Cranes.* By Dr. Paul Broca.

From the EDITOR.—*Revue Scientifique*, Nos. 39–40, 1878.

From the EDITOR.—“*Nature*” (to date).

From the EDITOR.—*Materiaux pour l’histoire de l’homme*, Feb. 1878.

From the SOCIETY.—*Proceedings of the Royal Society*. Vol. XXVII, No. 185,

From the AUTHOR, through the President.—*Illyrian Letters*. By Arthur J. Evans, B.A., F.S.A.

The following paper was read.

On METROLOGY and GEOMETRY in ANCIENT REMAINS, BY
W. M. FLINDERS PETRIE, Esq.

AMONG the various tests of the mental capacity of man, one of the most important, ranking in modern life on an equality with language, is the appreciation of quantity, or the notions of measurement and geometry. This may lay claim to a more important place than language, in some respects ; as it is a more delicate test of exact capability, ebbing and flowing more freely with variations of intelligence, yet present to some extent in the very lowest races, and developing in the highest culture more rapidly than language.

Not only is metrology a test of the powers of separate races, but it serves, like language, to show the connections of races ; and, as the foreign language of a superior and dominant race is imbibed by their inferiors, or acquired for commercial purposes, from just the same causes measures of one race may extend to others by external circumstances, without always implying a fusion of races or a common origin. Thus the possession of the same unit of measurement by different people implies either that it belonged to their common ancestors, or else that a very powerful commercial intercourse has existed between them.

The ideas of numbers are also useful tests, bearing both on the capacities and the connections of races. A mere binary multiplication or division of a quantity is performed by the lowest state of mind ; whereas, a decimal or duo-decimal system shows a much higher power of combining quantities, mentally and mechanically. The use of favourite numbers is also worth consideration, as it is very constant in different races. The Babylonian 6, and the early Jewish 10, are familiar instances.

A good test of the capabilities of a people is the average

accuracy of their workmanship; and though of course there are workmen of very varying character in all countries, yet by taking the averages of large numbers the results will be fairly comparable. It is found, on examination, that there is not as much difference in the average accuracy of different countries and ages as might be expected; Assyrian and prehistoric remains showing both an average error of $\frac{1}{100}$, and the highest class, the Greek and later English remains, having as large an average as $\frac{1}{250}$.

Although the value of units of measure, as tests of races, has been more or less recognized for many years, yet hitherto no methods have been systematically devised to extend this instrument of inquiry to those races whose units of measure are lost to us, but whose constructions executed in terms of those units still remain, and are in many cases the principal traces of their builders. Newton, however, in this, as in the rest of modern science, has laid the foundation; for in his "Dissertation on Cubits" he proceeds on the principle of recovering ancient measures by the relative ratios of the dimensions of buildings.

Now considering, first of all, the remains of those people who are known to have commonly used measures—Egyptians, Greeks, or Romans—if in any buildings erected by such a people we find a dimension continually recurring—there is a strong presumption that this dimension was some simple number of the unit used by the architect, as it would be highly improbable that such a result should occur by mere chance. But we are wholly ignorant of what number of units this length contained and equally ignorant of the length of the unit. If, however, instead of often finding one length repeated, we often find halves, doubles, and quadruples of a length, we have very nearly the same presumption that these multiples of the length are connected with it, as that the repetitions of the same length are connected together.

If, then, on examining the dimensions of a building together, it is found that they all bear simple relations to one another, it is highly probable that this is not the result of chance, but of their being all simple multiples of the unit used in the building. Now, knowing the relations of these lengths to each other, it is evident that we only need to combine all these ratios together, to obtain a series of numbers, one to each length, which shall be the only series of simple numbers bearing the same relations to one another as is borne by the measured lengths; or, in arithmetical phrase, their greatest common measure will be the unit by which they were laid out.

For instance, in a stone cist, found at Jerusalem, the dimensions are 12, 15, and 30 inches (omitting fractions as unnecessary for

illustration), it is evident that 15 contains half the number of units that there are in 30 inches; but 12 inches is two-fifths of 30 inches, therefore 30 must contain 5 or some multiple of 5 units, for 12 to contain a simple number; thus we see that no numbers but 4, 5, and 10 (or double or half of these) can have been the multiples used by the constructor; 4, 5, and 10 times 3 inches being 12, 15, and 30 inches. Three inches then (or more likely double of it) was the unit used in laying out the work. Here, as there are only three measurements, it leaves an uncertainty whether this 12, 15, and 30 inches may be 2, $2\frac{1}{2}$, and 5, or 4, 5, and 10, or 8, 10, and 20, or other numbers of units bearing the same proportions to each other. This is only an uncertainty belonging to cases where but few dimensions are considered; for if we found in a building lengths which bore the proportions 5, $2\frac{1}{2}$, $1\frac{1}{4}$, 8, 12, 16, to each other, these must be the multiples of the unit, for if we halve these proportional numbers (or double the unit) we have on the one hand the less likely fraction of $\frac{5}{8}$ instead of $1\frac{1}{4}$; and if we double these numbers we have on the other hand the less likely multiple 32 instead of 16; thus it is plain that these are much the simplest and most likely series of numbers proportional to the dimensions, and that the lengths in the building must have been originally laid out as containing these numbers of the unit.

There are other forms of this method of obtaining the original constructor's unit of a building; but they are all similar in principle, and need not be entered upon in giving a general outline of the investigations.

It is hardly necessary to observe that the whole of this depends on probabilities; it is possible that a large quantity of purely casual dimensions might all have simple relations to one another, but it is highly improbable; if, however, there is not a large number of dimensions to be considered, and if, from roughness of construction, it seems likely that allowance must be made for inaccurate work, then the possibility of casual coincidence becomes such that a portion (say $\frac{1}{10}$ th or $\frac{1}{20}$ th) of the results from a series of monuments are liable to be fallacious.

There are, however, two checks on the liability to casual coincidences, which are most effectual. We may premise that not only may the unit of a monument be ascertained from the dimensions, as already shown, but the mean value of it may of course be found from combining all the dimensions; and, further, the *probable error* of this mean value. The greater the probable error, the greater is the uncertainty as to the result; and the more closely the various lengths agree in showing the unit, the less will be the probable error of the mean. Now, not only may we ascertain the unit of a building, but if a unit was in use in a

country a large number of remains ought to be found, all constructed in terms of that unit; and, accordingly, the average of all the slightly varying results extracted from various buildings may be taken to obtain the average length of the unit throughout the country. Here, the two checks on the fallacious results come into play, for if a mean unit that has been extracted from a building be merely fallacious, it is very improbable that another fallacious result will agree with it, and that three or four fallacious results should all coincide is practically impossible; thus if the mean units of several buildings are found to agree together, it may be taken as certain that they are not mere fallacies.

The second check is, that if a unit be fallacious—that is to say, if several lengths have by chance so nearly simple relations between them as to appear the result of intention—it is highly unlikely that these relations will be all very exact; on the contrary, more and more of these fallacious results will be found on looking at relations which are less and less exact; thus the fallacious relations being on the average far less exact than the intentional relations, they will, as already noticed, have a far larger probable error. Further, as in taking the average of the values of the unit shown in various remains, the units will be weighted inversely according to the square of their probable errors; thus if a fallacious result happens to agree to a group of similar units, it will most likely have a larger probable error, and so have far less weight than the others in taking the mean. From these considerations it is evident that we have the means of not only ascertaining the unit used in a building, but also of checking and almost eliminating the few results of casual coincidence that may occur. And it is well to remember that all the sciences, beyond pure mathematics, rely wholly on the improbability of a series of casual coincidences, in the experimental researches on which all their laws depend. There is a possibility, however remote it may be, that even the law of gravitation is false, and that everything that obeys it does so by casual coincidences.

Having thus the means of ascertaining the unit of measure, and the multiples of it employed, the use of special numbers as favourites is shown by the character of the multiples; in one case the multiples may be mainly binary, and in another case 3, or in another 5, may be the favourite number.

This method of extracting the units of measurement having been extensively tested, by applying it to the various remains of the people of the Mediterranean, whose standards of measure are tolerably known, the general results are (carefully avoiding all chances of unconscious bias) that three-quarters of the mean units

found by this purely inductive examination of the ancient remains, are units historically known to have been used; and the remaining quarter are never so widely diffused as the others, and are therefore less important and less likely to be preserved in history. So far then as theory and practice can both give us confidence in a new method, it seems that we may rely on this fresh instrument of inquiry.

In turning to non-historic remains, and trying to recover whatever is possible from these unlettered records, it should be remembered that the inductive methods of metrology do not compel a result to appear, and yield a fallacious answer if there be no true one; if no unit has been used in the construction of a work, usually no unit will be obtained by this method of examination; it is not a conjuring tool to produce something out of nothing, but a key enabling us to unlock whatever may exist. It should not therefore be said that it is useless or impracticable to apply it to remains that may be commonly supposed to be barbarically unmetrical; on the contrary, let us use the reasonable means of inquiry cautiously, and see how far they will lead us, and the results will probably be as already found—that is, that the lower we go in the scale of regularity, the fewer cases do we find of any unit appearing by inductive examination.

With regard to the metrology and geometry apparent in non-historic remains, the proofs of design that are met with only give evidence of a minimum of intelligence in the constructors; how far higher they may have been capable of going, and may have gone, in their unrepresented ideas, is unknown. If the mental capacities of Londoners were to be estimated by the winding and irregular character of a large number of their streets, and the chance angles at which many of them meet, the opinion of them would not be very high.

The best illustrations of the character of the more regular and geometrical remains of non-historic times, will be a few of the plans of such remains that are here shown. These plans are a portion of a series that I have accurately surveyed on purpose to examine the amount of regularity and skill shown in the construction of those earthworks; about 100 such plans are done, and copies are placed in the British Museum Map Department, for the use of all interested in such remains. If they do not give all the details of levels, &c., required in various other inquiries, they will at least serve as accurate bases to which other details can be readily added, as the probable error of the points fixed is mostly $\frac{1}{50}$ th of an inch on the plan.

From accurate plans a great deal can be ascertained as to the methods and order of the construction of earthworks; what points

were laid out with care, and what were left to be filled in by eye; whether works were begun at several points at once, or whether they were all made from one end, and many similar details, which throw light on the ways of the workers. In some few cases, attention to geometric forms, circles, rectangles, and straight lines may be found, without regard to equality or measurement; and in other cases equal lengths may be found laid out, and the work finished by eye without much regard for geometry; but usually measurement and geometry accompany each other to a considerable extent, in the more regular works, which are however only a fraction of the whole. Any one of the following examples if it stood alone might not be above doubt, as to the intentional origin of its regularity; but when so many earthworks are each of a character for which it would be difficult to account by mere chance, their evidence becomes very forcible.

As an illustration of the metrical character of earthworks, we may refer to the East Everley works in Wiltshire; these are banks and ditches of the ordinary style, about a couple of feet high, lying on an open piece of down. On examining the plan it is found that the distances of most of the banks are all simple multiples of one length, many of them being two, three and four times the basis. The first striking objects are three banks at equal distances apart, the distance between the two outer banks being twice repeated in other parts; and on examining the other distances with this basis they are seen to agree to it in a manner beyond all probability of mere casual coincidence. Parts of this work were so evidently added by men who had far less regard for right-angles and regularity than the first workers, that we need not be surprised at their not paying the attention to measurement that is shown by their more careful predecessors. The length of the unit apparently shown in these banks is 691 inches \pm 5, which is 32 times a unit most frequently found in such works; 32 is a likely number to occur in rude works, as it would merely result from a repeated doubling, 2, 4, 8, 16, 32 of the unit, on a rope or cord.

In the earthworks at Hill Deverill, Wilts, considerable regularity of dimensions is also to be seen; and the banks are connected with a singular semi-circular earthwork of very true form, the mean difference from a true semi-circle being only 16 inches on a work 380 feet across. The radius of the semi-circular bank is exactly equal to four of the units of the straight banks outside it, which points to a connection between them. The form of it, and the ditch being placed inside the bank, where no strategical reasons exist for such an arrangement, both seem to show that it was not intended for defence.

The accuracy of other circular earthworks is greater than at Hill Deverill; a circular bank and ditch, commonly called a flat barrow, at West Everley has a mean error of only 7 inches from a true circle, on a diameter of 150 feet, or less than $\frac{1}{250}$ error; and this 7 inches includes my errors of estimating the true centre of the bank (15 feet wide), and of surveying and plotting. The circle at Chilham, Kent, has also under 4 inches mean error on 130 feet diameter. The great earth circle of Stonehenge is about as true as these other circles, the mean error being only 9 inches (including my own errors of survey) on a diameter of over 300 feet, or $\frac{1}{400}$; the mean error of the outer circle of sarsen stones from a true circle is 3.2 inches on a diameter of about 100 feet or $\frac{1}{400}$; the outer circle of blue stones is much less accurate, having a mean error of 9 inches on about 75 feet, or $\frac{1}{150}$; and the inner semi-circle of blue stones has 3 inches mean error on about 40 feet on $\frac{1}{150}$ th. We will not pause now to enter into the various conclusions that may be drawn from an accurate survey of Stonehenge, with regard to the relative date of various parts, and of works connected with it; but the figures just mentioned show that the mean errors from true circles are small in all the parts, and least of all in the great earth circle and sarsen circle; the errors are all ascertained by a survey of Stonehenge which I made on purpose for accurate examination, and in which over a thousand measures were made correct to a fraction of an inch, so as to make it certain that modern errors of survey were not attributed to the ancient constructors.

Circles are of course the easiest forms to make; but the care taken in throwing up banks and ditches 15 or 20 feet wide each, and yet maintaining the centre of the bank true to a few inches, shows that much importance was attached to making accurate and regular figures. In fact, with so much care given to regularity, it would be intrinsically probable that some regular unit of length would be, either transiently or generally, adopted; even if there was not such strong evidence for it in other works containing equal and proportional lengths. In a square at Upavon, care has been given to make the sides equal, as their mean difference is under a foot on a length of 110 feet; but in this, as in all the other earthworks, there is a lamentable deficiency in good right-angles; very few are to be found with less than a degree of error, and 5 degrees of error are often found.

In a very remarkable, and probably quite unique set of works at Steeple Langford, there are some of the best right angles: a raised plateau on the west is truly rectangular, with an average error of only 5 inches; and considering that it has been exposed for perhaps thousands of years, and that my errors of

estimating its form, and of fixing the positions of the corners in a survey extending about $\frac{1}{4}$ of a mile, are all included in this 5 inches, it would be rather hard to charge the original workers with any perceptible amount of the error. The long and short sides are in the ratio of 5 to 3, with an average error of only $4\frac{1}{2}$ inches on 70 feet; and this again is so small an error that it can scarcely be charged on the constructor. The unit used in laying it out, 5 for the side and 3 for the end, is just 10 of a unit commonly found in other earthworks; the sides being thus 50 and the ends 30 measures in length.

The circle divided into equal squares is apparently not so accurate, the mean error being 7 inches on 130 feet, but it is so very faint that the whole of it cannot be traced, and much of the error may be due to misinterpretation in surveying; in any case it is a strange piece of work, quite unaccountable on any simple utilitarian hypothesis, and shows a considerable love of geometry. With regard to this and other cases, it is well to state that the method of surveying adopted was such that I was wholly ignorant of the forms or equalities of any of the works, until the plotting was done some weeks afterwards; and thus there was no chance of *cooking* the survey, or assuming that any lines were equal, parallel, or at right-angles without proof. The other works around this circle are also peculiar, but do not call for notice in our present subject.

The most remarkable earthwork yet surveyed is one on the open down near Orcheston, Wilts; remarkable not for the detail of it, but for its form, which is a true ellipse, with an average error of only 11 inches on about 400 feet: and when it is considered that it has been all ploughed over, and unhappily a quarter of it obliterated, it is plain that the errors of determining its original form will swallow up most if not all of this 11 inches. The outer ellipse has apparently been made by eye or rough measurement from the inner, after that was formed. Such a regular outline as this inner ellipse might occur by chance, and we may say that in thousands of chance forms one ellipse would probably occur as accurate as this; but the improbability of finding it among only a couple of dozen of circular figures yet surveyed is such as to place its intentional construction beyond any reasonable doubt.

An ellipse shows far more than other figures the method of the constructors; remembering that there are three practical ways of describing an ellipse: first, by lengthening all the parallel chords of a circle in one direction; second, by a rectangular trammel, and a beam with points traversing the trammel; third, by a cord fastened at the two ends to the two foci, and a point traversing within the cord, by examination it can be toler-

ably settled in which of these three ways it was drawn. Not that I would suggest that this shows the constructors to have understood conic sections, or the properties of an ellipse; but merely that they knew by some means how to draw an elegant and regular oval figure, which was probably all they cared for. In the first two methods, by elongating a circle and by trammel and beam, the major and minor axes of the ellipse are the measured points; whereas by the third method by string, which is easier, the major axis and the distances of the foci are the measured points. Now a man who cared enough for an unusual figure to take such trouble about it, would certainly lay it out by measure, especially as we see that far less regular and intellectual works have considerable uniformity of dimensions. On looking then at the proportions of it, we find that the major axis has no simple ratio to the distance of the foci, therefore the third or string method was not adopted in laying it out; but the major and minor axes have exactly the ratio of 12:10, and from this the only conclusions are that either, *first*, the ellipse was laid out by elongating a circle drawn on the ground, which would require the worker at least to be capable of dividing any line into five parts and then adding a fifth to it; or else, *second*, that some modification of the beam and trammel method was adopted. This last is more probable, as two lines at right angles in the ground, a cord, and three men, is all that would be absolutely necessary. But though the means may be thus simple, the work shows an amount of appreciation of geometry, and of skill in execution, that would be rather surprising to find even in Greece or Egypt; and, when we look at the ground inside the work, and find it strewn with hundreds of chipped flints, which are only found perhaps once in a mile's walk outside the enclosure—the inferences, either that the flint workers appreciated and drew an ellipse, or else that we have here a series of coincidences which seem beyond all probability, are such as to warrant an exhaustive examination of these remains.

It might be suggested that a more intellectual people subsequently occupied a flint workers' site, and there laid out the ellipse; but there is nothing to give colour to such an idea, as there is no natural peculiarity of the ground to induce a man to settle there in preference to any other part of the gently sloping downs all around it; and it would be very unlikely that a subsequent people should exactly pitch on the spot strewn with flint flakes, and exactly enclose it with this ellipse, without having any of the flint-strewn ground outside it. As before mentioned, in this as in all the experimental sciences, everything rests on what is likely and unlikely, and until equally distinct evidence to the contrary can be given, the only reason-

able conclusion seems to be to accept the facts as they stand, and say that at present it appears to be 10 to 1, 100 to 1, or 1,000 to 1, that such and such things are true, whatever may be said by preconceived ideas apart from facts.

The principles of inductive metrology are not to be judged by their least certain application to the ruder and non-historic remains, of which we have looked at a few examples; but by their results when applied to the works of people whose history and measures are not open to such doubts and uncertainties. There, as far as researches have gone, the conclusions are closely in accord with what is already known, though many important and interesting facts have also appeared; such as the much wider extension of the use of the various ancient cubits and feet, beyond what is historically recorded; the recovery of many measures altogether lost in history; and the identity of some measures in countries between which no such connection was expected. For the details of these researches, and for full particulars of the working methods of examination, and of the application of probable error to all such numerical results, I can only refer to the published essay, "*Inductive Metrology*," in which I have stated the subject, in order to obtain the opinions and guidance of those versed in such inquiries.

I will only add that there are two important requirements connected with this subject, which can only be forwarded by such an institution as this: first, to urge on travellers to make accurate measurements of all regular and symmetrical remains which they describe—a dozen accurate measurements, of only two or three feet long, are worth more than any rough paces and guesses at general dimensions; secondly, to organize some plan of ensuring the accurate survey of remains in England, especially such as are in danger of destruction, or are already slightly ploughed over. The remarkable details that are brought to light by careful survey of these works will sufficiently recommend the necessity of rescuing them by recording their forms, even where their unimposing nature may deprive them of the legal protection now recognised as necessary for the principal remains of this country.

DISCUSSION.

Mr. TYLOR said that, on reading Mr. Petrie's work, he had suggested to him the desirability of bringing his method and results before the Anthropological Institute. The introduction of the exact method of mathematical comparison into the study of culture was in his opinion a step of much importance. Mr. Petrie's method of ascertaining the standard measures in use in any country by taking dimensions of structures as probably multiples in round numbers

of the unit, is based on that of Newton in his "Dissertation on Cubits," but makes an advance upon it by subjecting the probable errors of measurement, &c., to calculation according to the theory of probabilities. Mr. Tylor hoped Mr. Petrie's results would be subjected to careful criticism, as if found correct they would afford great help in tracing the lines by which civilization has travelled. To students of barbaric culture, Mr. Petrie's attempt in his book to prove the existence among the mound-builders of North America of a unit closely approaching a measure used in the Old World deserved careful consideration. With reference to the elliptic enclosure described by Mr. Petrie, Mr. Tylor thought the evidence tending against the notion of its having been drawn with a line from two set foci, and that the elongation or diminishing of the ordinates of a smaller or larger circle was rather more likely.

On the GAME of PATOLLI in ANCIENT MEXICO, and its PROBABLY ASIATIC ORIGIN. By E. B. TYLOR, Esq. D.C.L., F.R.S.

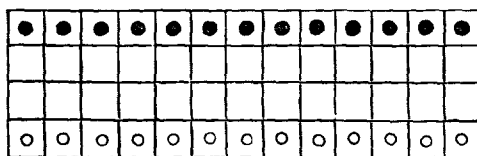
THE group of games to which our *backgammon* belongs is ancient and widely spread over the world. In it a number of pieces are moved on a diagram or board, not at the player's free choice as in draughts or chess, but conformably to the throws of lots or dice. One can hardly doubt, from the peculiar combination of chance and skill here involved, that all the games coming under this definition must be sprung from one original game, though this cannot now be clearly identified, and may indeed have disappeared many ages since. The closeness of correspondence between the abacus or reckoning-board with its little stones or calculi moved on its lines or spaces, and the board and pieces for ancient backgammon, which were even called by the same names, strongly suggests the idea that the original backgammon arose out of the sportive use of the calculating-board. Its descendants, the backgammon family, fall into two groups of games: those played with numbered dice, and those played with two-faced lots which can only fall in two ways, as we say "head or tail." These two groups of games may be conveniently called *dice-backgammon* and *lot-backgammon*. Dice-backgammon makes its appearance plainly in classic history. The game of the "twelve lines" (*duodecim scripta*) was played throughout the Roman Empire, and passed on with little change through mediæval Europe, carrying its name of *tabula*, *tables*; its modern representatives being French *trictrac*, English *backgammon*, &c. Among ancient Greek games, the *kubeia* or "dice-playing" is shown by various classical passages to have been of the nature of backgammon. It appears from Plutarch that in early times

it was played in Persia, where it still flourishes under the name of *nard*. There are also in Sanskrit literature mentions of related games in ancient India. For the purpose of the present paper, however, it will not be needful to go at length into the history of dice-backgammon. It is with the less familiar lot-backgammon that we are principally concerned. This, there is fair reason to believe, was the earlier, as it is the ruder form; dice-backgammon being a later improvement. That such is the case is made likely by the following descriptions of lot-backgammon, which show how clumsily the throwing of a whole handful of lots accomplishes what is done easily with one or two numbered dice.

One variety of lot-backgammon is to this day popular in Egypt and Palestine, under the name of *tab* or "game." It is described in Lane's *Modern Egyptians*, and in Hyde's *De Ludis Orientalibus*, part ii, p. 217. The lots thrown are tab-sticks, four slips of palm-branch about a span long, cut smooth on one side so as to be white, while the other side is left green, these sides being called the white and black respectively. The tab-sticks are thrown against a wall or stick, and the throw counts according to how many white sides come uppermost, thus:—

Whites up,	none,	one,	two,	three,	four,
Count	6	1	2	3	4
	(go on)	(go on,)	(stop)	(stop)	(go on).

Here there is an evident attempt to fix the values of the throws according to the probability of their occurrence, though this is very crudely carried out. Not only do the rarer throws of none-up and four-up score high, but they and one-up (*tab*) give the player a new throw, whereas the common throws of two-up and three-up lose the lead. This principle runs through all varieties of lot-backgammon. If, as is probable, such lot-scoring represents the earlier form from which dice-scoring is derived, then the privilege of a new turn being given to the extreme throws is the origin of the same privilege being given to doubles in our backgammon. Next as to the *tab*-board. This is divided into four rows of squares, each row having 7, 9, 11, 13, or other odd number of squares or "houses," thus:—



Rows of holes on a flat stone or on the ground will serve, and the pieces or "dogs" are bits of stone for one side and red brick

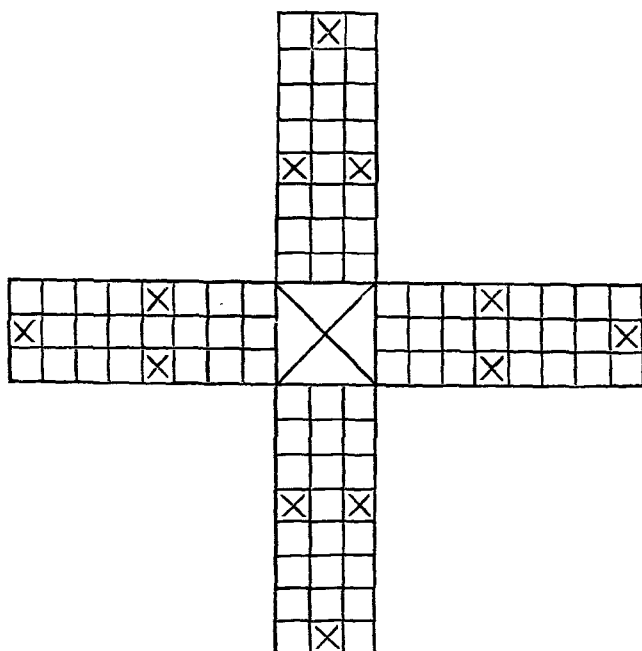
for the other, the players starting by putting a piece in each square on his own side as shown in the figure. Now a "dog" or draught can only be moved from its original square by a throw of tab (one-up). While still inert in its original place the draught is called a Nasara or Christian, but by the throw of tab it is made a Moslem, and can go out to fight. Suppose a player at the beginning throws tab, then four, and then two, he uses the first to bring forward his right-hand draught to the square in front, then moves it on six squares to the left, and then, his last throw having lost the lead, the other player takes his turn. When a throw enables a draught to be moved to a square occupied by one of the enemy's draughts, this is taken, but a square occupied by several draughts is safe. That is to say, our familiar rule of taking a man or hitting a blot belongs to lot-backgammon. The game is ended by one player losing all his men. It remains to be pointed out that the lot-throwing part of the game is sometimes played by itself. The player who throws four is called Sultan, and he who throws six receives the title of Wezir, while the unlucky thrower of two or three gets blows on the soles of his feet.

We now turn to the kind of lot-backgammon played in India, and now generally known under the name of *pachisi*. It is a popular mode of gambling in India, and even Europeans have been known to catch the enthusiasm of the natives, as witness the well-known story of that English official who, having paid his servants' wages, would sit down with them to a match at *pachisi* and sometimes win his money back. At the time of reading this paper, the best account of the game accessible to me was that in Herklot's *Qanoon-e-Islam*, but Mr. Arthur Grote has since kindly procured, through Dr. Rajendralala Mitra, of the Calcutta University, a more complete and consistent set of rules, which are here followed. The game may be played by two, three, or four persons severally, or by two pairs, the partners sitting opposite one another. A cloth, with coloured patches on it, to form the pattern or diagram, is generally used as a board, zealous players often carrying one rolled round in their turbans. The diagram or board is as shown in the illustration.

Each of the four arms contains 24 squares, of which the three crossed squares are called forts (*chik*). The pieces played with (*got*) are usually of turned wood or ivory, of a conoidal shape, much like our present rifle-bullets, and in sets of four, each of the four players having a set all of one colour, red, green, yellow, black. The moves of the pieces on the board are determined by the throws of cowrie-shells, which count according to how many fall mouth upward. The scoring is as follows when six cowries are used :—

Mouths up,	none,	one,	two,	three,	four,	five,	six.
Count,	6	10	2	3	4	25	12
	(go on)		(stop)			(go on).	

Suppose now four players to be seated, each at the end of one cross-arm. The object of each player is to move his men



from home down the middle row of his own arm, and then along the outside lines of squares from right to left (against the sun) till having made the circuit of the whole board, they come back to the end of their own arm, move up its middle row where they came down, and get back into the central space or home, the winner being he who gets his four men round first. The pieces move onward as many squares as the score of the throw. But a piece can only be started in the game when its owner throws a 10 (*das*) or a 25 (*pachisi*), which throws give a starting 1 (*puá*) in addition to the ordinary score, by which 1 a-piece is put on the first square and so started on its course. The high throws 6, 10, 12, 25, entitle the player to a new throw as doublets do in our backgammon, but at the lower throws the lead passes to the other player. Thus when the game begins, the throws are

useless till one player throws 10 or 25; suppose he throws 10, and this giving him a new throw, afterwards 2, he is able to start a piece on the first square, and then move it 10 and 2 squares onward. A single man on a square is taken by an enemy's man moving on to that square, and the taken man being dead (*mará*) is put back in the home to start afresh, but two or more men of one set on a square hold it safely, all which is as in our backgammon. In *pachisi*, however, taking or cutting (*kátú*) a man gives the player a new throw. Also in *pachisi*, the crossed squares or forts are places where a single man is in safety, and even blocks an enemy's man from moving there. The throws just mentioned, 10 followed by 2, are favourable as entering a man and putting him in safety in a fort; a 25 followed by a 4 is good in the same way. When a piece, after making the circuit of the board, comes back to go up its own middle row, it is called ripe (*pakká*) and is laid on its side to distinguish it from the starting-pieces on their way down. If the ripe piece gets again on the last square before home, it can only be got off the board as it got on, by a throw of *dus* or *pachisi*.*

The comparison of this Hindu game of *pachisi* shows close connection with the Arab tab; we have even the privileged throws giving a new throw, and a particular throw required to start a man. In India there is also played another game like *pachisi* except that the cowries are superseded by a kind of long dice, numbered on the four long sides but not at the ends; as thus played the game is called *chúpur*. The *pachisi* board has been introduced into England, with four sets of four small draughts as the pieces, and ordinary dice. In this state the game has made its nearest approach to our backgammon, and any one who tries the set of games will be likely to admit that in the *pachisi* played with cowries as lots, he has before him an early and rude stage of the game as lot-backgammon, out of which it passed into dice-backgammon. He may also be

* Further details. If 25, 10, or 12 are thrown thrice running, they are called rotten (*pachá*) and destroy one another, but a new throw of 10 or 25 may restore them, and so with six consecutive throws, restored by a seventh. In going home up the middle row, a player cannot use a throw for which there are not sufficient squares left. When players are in partnership, their pieces can be in the same squares. A partner whose pieces are all home can throw on his partner's behalf, after getting a new starting 1. He may also make a ripe man on its way home into an unripe one, for the purpose of cutting off an enemy's man, or revive and bring out again a piece which has got home. Sometimes a player having two pieces on one square moves them as a couple (*jora*) which can take an enemy's couple. Such couples can move at option to the 12th or 25th square with a throw of 25 or to the 5th or 10th square with a throw of 10, but uneven throws other than 25 disjoin the couple. This system of couples (which is allied to the plan of joining pieces in the Arab tab) is said not to be recognized by good *pachisi* players.

disposed to think that our own dice-backgammon, though tolerably ancient, came into existence by a similar course of development. It should be added that both as played with cowries and dice, games like *pachisi* are ancient in India. Having looked into the Sanskrit references and consulted Professor Jolly, of Würzburg, I am inclined to think that a game called *panchiká*, played with five cowries, may represent one of its earliest forms, for the name of *pachisi*, meaning "five-and-twenty," is clearly derived from the scoring of the throw of five cowries. Leaving this for further examination, it will be sufficient to have given an idea of the nature of the Hindu *pachisi*, for it is to this game that a variety of lot-backgammon appearing in Old Mexico will now be seen to present the most striking analogy.

Among the accounts of this Mexican game given by the Spanish chroniclers the earliest is that by Gomara, whose history was printed in 1552, so that his account must have been written while the conquest in 1521 was still fresh in memory. He writes as follows: "Sometimes Montezuma looked on as they played at *patoliztli*, which much resembles the game of tables and is played with beans marked like one-faced dice, which (beans) they call *patolli*, which they take between the hands and throw on a mat, or on the ground, where there are certain lines like a merrel (or draught) board, on which they mark with stones the point which fell up, taking off or putting on a little stone.* Torquemada, partly following this account, gives more details, showing the diagram played on to have been of the shape of a *pachisi* board, and the players to have had men of different colours. He says that "they call it the game of *patolli*, because these dice are called so; they throw them with both hands on a thin mat . . . on which are made certain lines after the manner of a + cross and others crossing them marking the point falling up (as at dice) taking off or putting on little stones of different colour, as in the game of tables."†

* Francisco Lopez de Gomara. "La istoria de las Indias, y conquista de Mexico" [Saragossa] 1552, fol. 42. "Algunas vezes mirauia Moteçguma como jugauan al Patoliztli, que parece mucho al juego de las tablas. Y que se juega con hauas, o frisoles raiaados como dados de harinillas que dizen Patolli. Los quales menean entre ambas manos. Y los echan sobre una estera, o en el suelo, donde ay ciertas raías, como alquerque, en que señalan con piedras el punto que cayó arriba, quitando, o poniendo china."

† Juan de Torquemada, Monarquía Indiana, Seville 1615. Book xiv., c. 12. "Aua otro juego que llaman Patolli, que en algo parece al juego de las tablas reales, y juegase con hauas y frisoles, hechos puntos en ellos, a manera de dados de arenillas, y dizenle juego Patolli, porque e-stos dados se llaman así; echanlos con ambas manos sobre una estera delgada que se llama petate, hechas ciertas rayas a manera de aspa y atrauessando otras señalando el punto que cayó havia arriba (como se haze en los dados) quitando, o poniendo chinas de diferente color, como en el juego de las tablas." The word "aspa" means an equal-armed cross, the

Next come the particulars given by Sahagun, which though not adding much to our knowledge of the game, explain why it ceased to be played some time after the conquest. "The lords for their pastime also played a game called *patolli*, which is as the game of merells (or draughts) or the like, or dice-playing, and there are four large beans, each having a hole, and they throw them with the hand, as one plays at knuckle-bones, on a mat where there is a figure drawn. At this game they used to play and win precious things, such as gold beads and precious stones, very fine turquoises. This game and that of ball they have left off, being suspicious on account of some idolatrous superstitions in them." In another place he says: "The second pastime they had was a game like dice; they made on a mat a painted cross, full of squares like the game of draughts, and sitting down on the mat, they took three large beans with certain points made in them, and let them fall on the painted cross, &c.*

At the reading of my paper, I was only able to refer to the work of Diego Duran as cited in Bancroft's *Native States of the Pacific*, vol. ii, p. 300. The part of his work containing the account of *patolli* is still in MS., but there is a transcript in the Bancroft Library at San Francisco, from which Mr. Oak, the librarian, has since kindly furnished me with an extract. The game they played on the mat (says Duran) they called *patolli*, which is the same name we now give to cards. On this mat they had a great cross painted taking the mat from corner to corner. Within the hollow of the cross were certain transverse lines forming houses or squares, which cross and squares were marked and drawn in lines with liquid ulli (indiarubber). For these squares there were twelve small stones, six red and six blue, which they divided between the players, to each so many. If two played, which was the ordinary way, one took six and the other the other six. The dice were certain black beans, five or ten

arms of a windmill, &c.; "arenillas" are dice with points only on one face or side, they are numbered from one to six.

* Fr. Bernardino de Sahagun, "Historia Universal de las Cosas de Nueva España," printed in Lord Kingsborough's "Antiquities of Mexico," vol. vii., book viii., c. 10. "Tambien los Señores por su pasatiempo jugaban un juego que se llama Patolli, que es como el juego del castro ó alquerque ó casi, ó como el juego de los dados; y son quatro frisoles grandes que cada uno tiene un agujero, y arrojanlos con la mano, sobre un petate como quien juega a los carnicoles donde está hecha una figura. A este juego solian jugar y ganarse co-sas preciosas, como cuentas de oro y piedras preciosas, turquesas muy finas. Este juego y el de la pelota hanlo dejado, por ser sospechosos de algunas supersticiones idolatricas que en ellos hay," c. 17. "El segundo pasatiempo que tenian era un juego como dados; hacien en un petate una cruz pintada, llena de cuadros semejantes al juego del alquerque o castro, y puestos sobre el petate sentados, tomaban tres frisoles grandes, hechos ciertos puntos en ellos, y dejabanlos caer sobre la cruz pintada, y de alli tenian su juego;" &c.

or as they chose to lose or gain, which had certain white holes in each bean where they marked the number of squares which were gained on each hand; where five were marked they were ten, and ten twenty; and if one, one; and if two, two; and if three, three; and if four, four; but marking five they were ten, and if ten, twenty; and so those little white dots were lots and markers of the lines that were gained, and for shifting the stones from square to square. Duran goes on to describe (as the other authors do) the eagerness with which the Mexicans played at this game; how gamesters went about with the mat and stones in a little basket under their arms; how they spoke to them as though they were things with sense and intelligence; and having talked to them with a thousand loving words and requests, would set up the little baskets with the instruments of the game and the painted mat, and bringing fire would throw into it incense and sacrifice before those instruments, bringing offerings of food. Having finished the offering and ceremonies they went off to play with all the confidence in the world. The author continues, that the name of the god of the dice was Macuixochitl, which means Five roses (five flowers would have been more correct). Him the players invoked as they threw the beans from the hand, which was in the following manner: That the beans serving as dice are five in honour of that god named Five Roses, and to throw the lot they keep rubbing them a while between their hands, and on throwing them on the mat where there is the figure of the fortune and its counting which is in the manner of two clubs, they called with a loud voice on Macuixochitl and gave a great clap, and then looked to see the points that had come, and this Macuixochitl was only for this game of the dice. It seems, however, that they would also sometimes call on the god of gambling, Ometochtli, to give them a good point, &c.*

* Diego Duran, "Hist. Indias," MS., tom. iii., cap. xxii. . . . al juego que sobre esta estera jugaban llamaban "patolli," que es el mismo vocablo que ahora llamamos naypes. Sobre esta estera tenían pintada una aspa grande la que tomaba el petate de esquina á esquina. Dentro del hueco de la aspa había atravesadas unas rayas que servían de casas. la cual aspa y casas estaban señaladas y rayadas con ulli derretido . . . para estas casas había doce piedras pequeñas las seis coloradas y las seis azules, las cuales pedrezuelas partían entre los que jugaban á tantas á cada cual: si jugaban dos que era lo ordinario tomaba el uno las seis y el otro las otras seis; y aunque jugaban muchos jugaba uno por todos ateniéndose á la suerte de aquel, como entre los Españoles se juegan los albrures ateniéndose á la mejor suerte, así se atenían acá al que mejor meneaba los dados, los cuales eran unos frisoles negros cinco ó diez ó como querían perder ó ganar, los cuales tenían unos ahugerillos (s/c) blancos en cada frisol por donde pintaban el número de las casas que se aventajaban en cada mano, donde se pintaban cinco eran diez y diez veinte, y si uno. uno. y si dos, dos. y si tres, tres. y si cuatro, cuatro; pero pintando cinco eran diez, y si diez veinte, y así aquellas pintillas blancas eran suertes y cuenta de las rayas que se ganaban; y darnua pars la

These accounts of *patolli* are the only ones to be trusted, the newer ones being hardly to the point, except where they are following the old authorities. Clavigero repeats what he has read, adding that "he who first got three stones in a row, won."* But this may only be an amplification of his predecessors' comparison of the game to alquerque, which seems to have been like our merells, where counters are moved on a diagram with the object of getting three in a line, whence it is also called in Spanish "tres en raya," or "three in a row." Again, Brasseur says that he who returned first into the squares won the game.† Probably it was so, but this author in stating it may only have gone upon the earlier statement that the game was played like tables.

Putting all this together, it is plain that the Spanish chroniclers were right in comparing *patolli* to their own game of tables or backgammon, but had they been acquainted with *pachisi*, they would doubtless have pointed out the closer connection of *patolli* with this Indian game. The playing backgammon-fashion with coloured stones as counters, on a diagram like a cross, full of squares, on which the moves were made by counting squares according to the throws of marked lots, in scoring which a disproportionate advantage was given to the high throws, all corresponds to *pachisi*. And where the beans

pedras de unas casas en otras . . . Andaban los taures de este juego siempre con la estera debajo del sobaco, y con los dados atados á un pañito como algunos taures de este tiempo, que siempre andan apercebidos con los naypes en las calzas de tablage en tablage; aquellos dados juntam^{te} con las piedrezuelas del juego traian en una baserita (*sic*) pequeña á los cuales hacian reverencia como á Dioses fingiendo en ellos haber alguna virtud, y así les hablaban cuando jugaban como á cosa que tubiese algun sentido ó inteligencia de lo que le pedian . . . así estos naturales hablaban á los frisolillos y al petate y decian mil palabras de amor y mil requiebros y mil supersticiones, y despues de haberles hablado ponian las petaquillas en el lugar de adoracion con los instrumentos del juego y la estera pintada junto á ella y traia lumbre y echaba en la lumbre incienso y ofrecia su sacrificio ante aquellos instrumentos ofreciendo comida delante de ellos. Acabada la ofrenda y ceremonias ivan á jugar con toda la confianza del mundo."

"El nombre del Dios de los dados era Macuixuchitl, que quiere decir cinco rosas: á este invocaban los jugadores cuando arrojaban los frisoles de la mano, lo cual era á la manera que dire; que los frisolillos que sirven como de dados son cinco á honra de aquel Dios que tiene nombre de cinco rosas; y para echar la suerte traenlos un rato refregándolos entre las manos, y al lanzallos sobre la estera donde está la figura de la fortuna y cuenta suya que es á la manera de dos bastos, llamaban á alta voz á Macuixuchitl, y daban una gran palmada, y luego acudia á ver los puntos que le habian entrado; y este Macuixuchitl era solamente para este huego de los dados."

"... invocaban á este Dios cuando jugaban, diciendo 'el Dios Ometochtly me de buen punto.'" &c.

* Clavigero, "Storia Antica del Messico," Cesena, 1780, vol. ii., p. 185, "e chi prima avera tre pietruzze in fila, quegli vinceva."

† Brasseur de Bourbourg, "Histoire des Nations Civilisées du Mexique et de l'Amérique Centrale," Paris, 1858, vol. iii., p. 671, "et celui qui retournait le premier dans les cases gagnait la partie."

used as lots at *patolli* seem to have been sometimes only marked on one side to distinguish them from the other in head-and-tail fashion, while sometimes they were numbered; this matches with the two ways of playing the Hindu game, with cowries as two-faced lots, or with the numbered stick-dice. It seems so clear that the Mexican game must have come from Asia, that the question first arises—Could any Spanish or Portuguese sailor have learnt it in the East Indies, and then on a voyage to the West Indies have been, perhaps, wrecked on the Mexican coast, and taught his new acquisition to the natives? But the dates do not allow room for this supposition.

Vasco de Gama's voyage to India was about 1500, and the conquest of Mexico was in 1521. It is by earlier direct communication from Asia that we must explain the presence of *patolli* in Mexico. That such communication took place has been proved by Alexander von Humboldt's well-known argument from the occurrence in Mexico of a chronological calendar in which signs were combined to date days, years, &c., on a complex perverse principle closely resembling that on which the Tibetans, Chinese, &c., still reckon dates. Not only were the signs, tiger, dog, ape, hare, &c., used to date periods of time both by these nations and the ancient Mexicans, but they combine such signs in series, so that as in Japan "younger Fire Hare" denotes the fourth year of the cycle, so in Mexico "two Hare Fire" stands for the 28th day of a year. The correspondence between the myths of successive destructions of the world in Asia and Mexico is hardly less remarkable. The same causes which brought Asiatic calendars and myths into Aztec culture, may have brought over the Indian game of *pachisi*. It is not needful to account for this connection between nations of the two continents by supposing migrations of population on a large scale. The necessary contact might even have been made by the drifting over of boats or junks, with the crews alive, from East Asia to the Pacific coast of North America: an event which happens every now and then, as it probably has done for ages. By whatever communication Asiatic calendars and cosmic myths found their way into America, the Hindu game of *pachisi* or some allied form of it may have passed over from somewhere in Asia, and established itself in Mexico as *patolli*.

The evidence derived from this game, however, by no means ends here. Father Joseph Ochs, a Jesuit missionary who was in Mexico in 1754-68, in the following passage is no doubt speaking of the natives in the Tarahumara and Pima district. "Instead of our cards they have slips of reed or bits of wood, a thumb wide and almost a span long, on which, as on a tally, different strokes are cut in and stained black. These they hold

together tight in the hand, raise them as high as they can, and let them fall on the ground. Whoever then has most strokes or eyes for him, wins the stakes. This game is as bad as the notorious hazard. They call it *patole*. As it is forbidden under pain of blows, they choose a place out in the woods, yet the noise of these bits of wood has discovered me many sharpers hidden in the bush. To play the more safely they spread out a cloak or carpet, not to be betrayed by the noise.* Thus toward a thousand miles from the city of Mexico, we find a game going on which still keeps the Aztec name of *patolli*, although the language of the district is not Aztec, and which seems to be the Mexican game so far as the casting lots are concerned, but without the counters. The use of slips of wood as lots is curiously like the Egyptian *tāb*, which game also, it was noticed, is sometimes played without the counters, though only for sport, not gambling.

If now we travel another thousand miles and more north-eastward, into the region of the great lakes, we shall find among the so-called North American Indians a game which on examination appears closely connected with the Mexican *patolli*. It is widely spread, and has been mentioned by many authors as the game of plum-stones, game of the bowl, &c. It was clearly not derived from the Europeans, and is noticed as a regular Indian game by the Jesuit missionaries among the Hurons as early as 1636;† they call it *jeu de plat*, and say it was played with six plum-stones, white on one side and black on the other, in a dish which was hit hard against the ground so that the stones turned over anyhow, the game being to get them all black or all white. They clearly did not quite understand the game, of which the best account is that given by Mr. L. H. Morgan, as played among the Iroquois.‡ It appears in two forms. As *gus-ga-e-sá-tā*, or deer buttons, it was strictly a fireside game,

* Murr, "Nachrichten von verschiedenen Ländern des Spanischen Amerika," Halle, 1809, part 1., p. 256. "Anstatt unserer Karten haben sie daumenbreite, fast spannenlange Rohrschnitze, oder auch Holzergen, in welche, wie auf einem Kerkholze, verschiedene Striche eingeschnitten und schwarz getränkt sind. Diese halten sie in der Hand fest zusammen, heben sie so hoch sie können in die Höhe, und lassen sie auf die Erde fallen. Wer denn mehrere Striche oder Augen über sich hat, gewinnt den Einsatz. Dies Spiel ist so schlimm, als das verruchte Würfelspiel. Sie nennen es Patole. Weil es bey Strafe der Schläge verboten ist so ersehen sie sich hiezu einen Ort im Gebusche aus; jedoch hat mir der Klang dieser Hölzchen manche im Gebüsche versteckte Gauner entdeckt. Sicherer zu spielen breiteten sie einen Mantel oder Teppich aus, um nicht durch den Schall verrathen zu werden." &c.

† "Relations des Jesuites dans la Nouvelle France" (reprinted Quebec, 1858), 1636, p. 113. See also Loskiel "History of Mission of United Brethren among the Indians in North America," translated by Latrobe, London 1794, part 1., p. 106.

‡ L. H. Morgan, "League of the Iroquois," Rochester (N.Y.), 1851, p. 302-307.

though sometimes introduced as an amusement at the season of religious councils, the people dividing into tribes as usual and betting upon the result. Eight buttons, about an inch in diameter, shaped like a double-convex lens, were made of elk-horn, rounded and polished, and slightly burned on one side to blacken them. The game was played by two or more, all the players continuing in their seats till it was determined. A certain number of beans, fifty perhaps, were made the capital, and the game continued until one of the players had won them all. Two persons spread a blanket, and seated themselves upon it. One of them shook the deer buttons in his hands, and then threw them down. If 6 turned up of the same colour, it counted 2, if 7, it counted 4, and if all, it counted 20, the winner taking as many beans from the general stock as he made points by the throw. He also continued to throw as long as he continued to win. When less than 6 came up, either black or white, it counted nothing, and the throw passed to the other player. In this manner the game was continued until the beans were taken up between the two players. After that the one paid to the other out of his own winnings, the game ending as soon as either player's beans were all lost. Or four could play, either with a partner or independently. When deer buttons was played as a public game, the arrangement was as in the peach-stone game.

The peach-stone game, *gus-ka-eh*, was a betting game, played by the people divided into tribes, and by custom it was the concluding exercise on the last day of the Green Corn and Harvest Festivals, and also of the New Year's Jubilee. Its introduction among them is ascribed to the first *To-do-dä-ho*, who flourished at the formation of the "League," and a popular belief prevailed that it would be enjoyed by them in the future life, in the realm of the Great Spirit. It was played in the public council-house, by a succession of players, two at a time, under the supervision of managers. A number of beans, usually 100, made the bank. When the bets had been made, and the articles staked delivered into the custody of the managers, these seated themselves on a raised platform, the throng arranged themselves in two divisions, and two players sat down to play, one on each side, each provided by the managers on his own side with five beans out of the bank. Six peach-stones were used, ground or cut down to the flattened roundish form required, and burnt on one side to blacken them. They were put in a wooden or earthen bowl and shaken by the player. When they ceased rolling, if all came up of one colour, white or black, it counted 5, entitling the player to receive 5 beans from his adversary: if 5 came up of one colour, it counted 1, giving 1 bean; if less than 5 of either

colour came up, it counted nothing, and the lead passed to the opponent. When either player had lost all his stock of beans, he retired, and a new player with a new stock replaced him, till one side had gained all the beans, thus winning the game.

This using of beans as counters may possibly have been learnt by the Indians from the white men, so that we must not found any ethnological argument on it, nor can we with safety treat as properly belonging to the Indian tribes of America the varieties of the game which are described in Schoolcraft's "Indian Tribes," Part II., p. 71, as played by the Dacotas under the name of *kun-ta-soo*, and by the Ojibwas as *puggesaing*. The Dakota game is played with eight plum-stones, but some of them are marked with figures of tortoise, war-eagle, &c., and the counting is elaborate. The Ojibwa name is well known to English readers from Longfellow having embodied in his "Hiawatha" a long description of it from Schoolcraft, under the title of "the game of bowl and counters, puggesaing with thirteen pieces." It has in it brass discs and pieces of bone cut to represent ducks, war-clubs, &c, and these all have a right and wrong side, the reckoning of the combinations thrown ranging from nothing up to 158 for a single throw, in a most complicated way. Now though modern Indians have played these games, there are no early mentions of them, as there is of the simple game of the bowl and plumstones. It is therefore quite likely that these more complex games may be modern varieties of the old American game of the bowl, made with European help.

To sum up the argument from the presence of these games in America. Lot-backgammon as represented by *tab*, *pachisi*, &c., ranges in the Old World from Egypt across Southern Asia to Birma. As the *patolli* of the Mexicans is a variety of lot-backgammon most nearly approaching the Hindu *pachisi*, and perhaps like it passing into the stage of dice-backgammon, its presence seems to prove that it had made its way across from Asia. How it came is uncertain, though the drifting across of Asiatic vessels to California offers the readiest solution. At any rate, it may be reckoned among elements of Asiatic culture traceable in the old Mexican civilization, the high development of which in metal work, architecture, astronomy, political and religious institutions, &c., seems to be in large measure due to Asiatic influence. From Mexico, it appears that gambling by means of lots spread among the ruder north-west tribes, bearing the Aztec name of *patolli*, and being in fact the lot-casting part of that game but without the board and stone counters. Moreover, similar gambling by lot-casting was early found among the tribes of the great American lakes. This method of lot-casting, which corresponds to that of lot-backgammon, was certainly not

introduced into America by the Europeans, who were not acquainted with it. We are therefore left to consider that the North American Indians got it probably through Mexico, but at any rate in some manner from Asia. Now if any item of culture, even a matter so trifling as a game, can be distinctly made out to have passed over from Asia and established itself among the rude tribes of North America, this opens a way by which various other features of their culture may be fairly accounted for as due to Asiatic influence.

DISCUSSION.

Lient. Col. GODWIN AUSTEN said: I have listened with very great interest to Mr. Tylor's paper on the striking similarity of the old Mexican game of "*patolli*" with the common Indian game called "*pachisi*." I became acquainted with this last when employed on the survey of Kashmir some years ago. It was the favourite game of the natives of my establishment, and this led me to learn the game, which I often played with them, and I became then well acquainted with the rules. Knowing that Mr. Tylor was writing on the subject, I have put a few notes and the rules together of the game as played by the Kashmiris, Punjabis, &c.

The game is well known all along the northern part of India to Assam. I do not know whether it extends to Burma, but very probably is known there, from the larger Hindustani element now in the country. I can, I think, clear up the meaning and similarity of one of the statements regarding the Mexican game so described by the old Historian (Clavigero) who very probably did not thoroughly know the game of *patolli*, and described it as a looker-on would do, and as most Europeans in India would now if explaining the game of *pachisi*. He says the game ends when three of the coloured pieces are *all in a row*. Now in the game of *pachisi*, played with four sets of three-coloured markers, "*Gúti*", as they are played out they are placed in a row within the centre square or goal, and opposite to the player's own arm of the cross-board, and this position shows plainly to those engaged how many each individual has played out round the table; the first to place them all in a row being the winner, the others in succession.

Rules of the Game of Pachisi.

The game is played by two, three, or four persons (A B C D) having three markers (*Gúti*) or counters of different colours each (to shorten the game only two are often agreed on to be played), these are moved over the squares of the board, commencing at A to a', a", a"', &c. Certain squares are marked with diagonal lines; in these a marker is safe and cannot be taken up; the term for this is "*Gúché baithna*,"—*Gúché* being probably a corruption of *Gosha*, used in the sense of "*Gosha Nishin*"—a hermit.

5. Markers are taken up "*guti marna*," when by the throw of the cowries a marker can be placed in a square already occupied by an adversary—who then has to commence again from his original side of the board.

It will be seen from the construction of the board that from one corner square to the opposite and inner corner square is 25, or from a' a i. to a''' a vii.

MR. HYDE CLARKE suggested to Mr. Tylor that the Tarahumara language possesses elements independent of its Aztek affinities, and that, too, it is related to remarkable languages of the Old World. He considered the discovery of Mr. Tylor's had another important link in the connection between the Old World and the New, and could not concur with him in attributing the calendar, the creation legend and the attoli, and he would add the measurements of Mr. Petrie, and so many other proofs of connection, to the casual influence of Chinese and Japanese wrecks before the time of Monteruma. He attributed them to specific migration, of which they had now so much evidence.

MR. WALHOUSE, Capt. DILLON, and the PRESIDENT took part in the above discussion, and Mr. TYLOR replied.

APRIL 30TH, 1878.

Major-General A. LANE FOX, F.R.S., *Vice-President, in the Chair.*

The minutes of the previous meeting were read and confirmed.

The following presents were announced, and thanks were ordered to be returned to the respective donors for the same.

FOR THE LIBRARY.

From the SOCIETY.—Proceedings of the Royal Society. Vol. XXVII, No. 186.

From the SOCIETY.—Mémoires de la Société Impériale des Amis d'histoire naturelle, d'Anthropologie et d'Ethnographie. Vol. XXIX.

From the SOCIETY.—Bulletin de la Société d'Anthropologie de Paris. Tome XII. No. 4.

From the EDITOR.—*Revue Scientifique.* No. 41–43, 1878.

From the SOCIETY.—Proceedings of the Society of Antiquaries of London. Vol. VII, No. 3.

From the EDITOR.—*Revue Internationale des Sciences.* No. 15–17, 1878.

From the ACADEMY.—*Atti della R. Accademia.* Vol. II, No. 4.

From the EDITOR.—“*Nature*” to date.

The following paper was read by the Author:—

COMPOSITE PORTRAITS, *made by combining those of many different persons into a single resultant figure.* By FRANCIS GALTON, F.R.S.

I submit to the Anthropological Institute my first results in carrying out a process that I suggested last August in my presidential address to the Anthropological Subsection of the British Association at Plymouth, in the following words:—

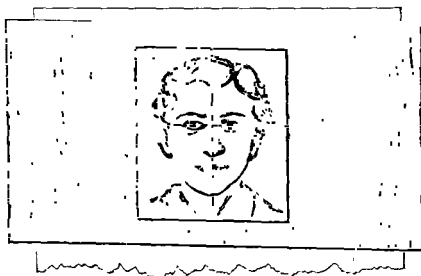
“Having obtained drawings or photographs of several persons alike in most respects, but differing in minor details, what sure method is there of extracting the typical characteristics from them? I may mention a plan which had occurred both to Mr. Herbert Spencer and myself, the principle of which is to superimpose optically the various drawings, and to accept the aggregate result. Mr. Spencer suggested to me in conversation that the drawings reduced to the same scale might be traced on separate pieces of transparent paper and secured one upon another, and then held between the eye and the light. I have attempted this with some success. My own idea was to throw faint images of the several portraits, in succession, upon the same sensitised photographic plate. I may add that it is perfectly easy to superimpose optically two portraits by means of a stereoscope, and that a person who is used to handle instruments will find a common double eyeglass fitted with stereoscopic lenses to be almost as effectual and far handier than the boxes sold in shops.”

Mr. Spencer, as he informed me had actually devised an instrument, many years ago, for tracing mechanically, longitudinal, transverse, and horizontal sections of heads on transparent paper, intending to superimpose them, and to obtain an average result by transmitted light.

Since my Address was published, I have caused trials to be made, and have found, as a matter of fact, that the photographic process of which I there spoke enables us to obtain with mechanical precision a generalised picture; one that represents no man in particular, but portrays an imaginary figure possessing the

average features of any given group of men. These ideal faces have a surprising air of reality. Nobody who glanced at one of them for the first time, would doubt its being the likeness of a living person, yet, as I have said, it is no such thing; it is the portrait of a type and not of an individual.

I begin by collecting photographs of the persons with whom I propose to deal. They must be similar in attitude and size, but no exactness is necessary in either of these respects. Then, by a simple contrivance, I make two pinholes in each of them, to enable me to hang them up one in front of the other, like a pack of cards, upon the same pair of pins, in such a way that the eyes of all the portraits shall be as nearly as possible superimposed; in which case the remainder of the features will also be superimposed nearly enough. These pinholes correspond to what are technically known to printers as "register marks." They are easily made: A slip of brass or card has an aperture cut out of its middle, and threads are stretched from opposite sides,



making a cross. Two small holes are drilled in the plate, one on either side of the aperture. The slip of brass is laid on the portrait with the aperture over its face. It is turned about until one of the cross threads cuts the pupils of both the eyes, and it is further adjusted until the other thread divides the interval between the pupils in two equal parts. Then it is held firmly, and a prick is made through each of the holes.

The portraits being thus arranged, a photographic camera is directed upon them. Suppose there are eight portraits in the pack, and that under existing circumstances it would require an exposure of eighty seconds to give an exact photographic copy of any one of them. The general principle of proceeding is this, subject in practice to some variation of details, depending on the different brightness of the several portraits. We throw the image of each of the eight portraits in turn upon the same part of the sensitised plate for ten seconds. Thus, portrait No. 1 is in the front of the pack; we take the cap off the object glass of the camera for ten seconds, and afterwards replace it. We then

remove No. 1 from the pins, and No. 2 appears in the front ; we take off the cap a second time for ten seconds, and again replace it. Next we remove No. 2 and No. 3 appears in the front,



which we treat as its predecessors, and so we go on to the last of the pack. The sensitised plate will now have had its total exposure of eighty seconds ; it is then developed, and the print taken from it is the generalised picture of which I speak. It is a composite of eight component portraits. Those of its outlines are sharpest and darkest that are common to the largest number of the components ; the purely individual peculiarities leave little or no visible trace. The latter being necessarily disposed equally on both sides of the average, the outline of the composite is the average of all the components. It is a band and not a fine line, because the outlines of the components are seldom exactly superimposed. The band will be darkest in its middle whenever the component portraits have the same general type of features, and its breadth, or amount of blur, will measure the tendency of the components to deviate from the common type. This is so for the very same reason that the shot-marks on a target are more thickly disposed near the bulls-eye than away from it, and in a greater degree as the marksmen are more skilful. All that has been said of the outlines is equally true as regards the shadows ; the result being that the composite represents an averaged figure, whose lineaments have been softly drawn. The eyes come out with appropriate distinctness, owing to the mechanical conditions under which the components were hung.

A composite portrait represents the picture that would rise before the mind's eye of a man who had the gift of pictorial imagination in an exalted degree. But the imaginative power even of the highest artists is far from precise, and is so apt to be biassed by special cases that may have struck their fancies, that no two artists agree in any of their typical forms. The merit of the photographic composite is its mechanical precision, being subject to no errors beyond those incidental to all photographic productions.

I submit several composites made for me by Mr. H. Reynolds. The first set of portraits are those of criminals convicted of murder,

manslaughter, or robbery accompanied with violence. It will be observed that the features of the composites are much better looking than those of the components. The special villainous irregularities in the latter have disappeared, and the common humanity that underlies them has prevailed. They represent, not the criminal, but the man who is liable to fall into crime. All composites are better looking than their components, because the averaged portrait of many persons is free from the irregularities that variously blemish the looks of each of them.

I selected these for my first trials because I happened to possess a large collection of photographs of criminals, through the kindness of Sir Edmund Du Cane, the Director-General of Prisons, for the purpose of investigating criminal types. They were peculiarly adapted to my present purpose, being all made of about the same size, and taken in much the same attitudes. It was while endeavouring to elicit the principal criminal types by methods of optical superimposition of the portraits, such as I had frequently employed with maps and meteorological traces,* that the idea of composite figures first occurred to me.

The other set of composites are made from pairs of components. They are selected to show the extraordinary facility of combining almost any two faces whose proportions are in any way similar.

It will, I am sure, surprise most persons to see how well defined these composites are. When we deal with faces of the same type, the points of similarity far outnumber those of dissimilarity, and there is a much greater resemblance between faces generally, than we who turn our attention to individual differences are apt to appreciate. A traveller on his first arrival among people of a race very different to his own thinks them closely alike, and a Hindu has much difficulty in distinguishing one Englishman from another.

The fairness with which photographic composites represent their components, is shown by six of the specimens. I wished to learn whether the order in which the components were photographed made any material difference in the result, so I had three of the portraits arranged successively in each of their six possible combinations. It will be observed that four at least of the six composites are closely alike. I should say that in each of this set the last of the three components was always allowed a longer exposure than the second, and the second than the first, but it is found better to allow an equal time to all of them.

The stereoscope, as I stated last August in my address at

* "Conference at the Loan Exhibition of Scientific Instruments." 1878. Chapman and Hall Physical Geography Section. p. 312. "On Means of Combining Various Data in Maps and Diagrams." by Francis Galton, F.R.S.

Plymouth, affords a very easy method of optically superimposing two portraits, and I have much pleasure in quoting the



The accompanying woodcut is as fair a representation of one of the composites as is practicable in ordinary printing. It was photographically transferred to the wood, and the engraver has used his best endeavour to translate the shades into line engraving. This composite is made out of only three components, and its three-fold origin is to be traced in the ears, and in the buttons to the vest. To the best of my judgment the original photograph is a very exact average of its components: not one feature in it appears identical with that of any one of them, but it contains a resemblance to all, and is not more like to one of them than to another. However the judgment of the wood engraver is different. His rendering of the composite has made it exactly like one of its components, which it must be borne in mind he had never seen. It is just as though an artist drawing a child had produced a portrait closely resembling its deceased father, having overlooked an equally strong likeness to its deceased mother, which was apparent to its relatives. This is to me a most striking proof that the composite is a true combination.

following letter, pointing out this fact as well as some other conclusions to which I also had arrived. The letter was kindly forwarded to me by Mr. Darwin; it is dated last November, and was written to him by Mr. A. L. Austin, from New Zealand, thus affording another of the many curious instances of two persons being independently engaged in the same novel inquiry at nearly the same time, and coming to similar results.

“Invercargill, New Zealand,
“November 6th, 1877.

“TO CHARLES DARWIN, Esq.

“SIR,—Although a perfect stranger to you, and living on the reverse side of the globe, I have taken the liberty of writing to you on a small discovery I have made in binocular vision in the stereoscope. I find by taking two ordinary carte-de-visite photos of two different persons' faces, the portraits being about the same sizes, and looking about the same direction, and placing them in a stereoscope, the faces blend into one in a most remarkable manner, producing in the case of some ladies' portraits, in every instance, a *decided improvement* in beauty. The pictures were not taken in a binocular camera, and therefore do not stand out well, but by moving one or both until the eyes coincide in the stereoscope the pictures blend perfectly. If taken in a binocular camera for the purpose, each person being taken on one half of the negative, I am sure the results would be still more striking. Perhaps something might be made of this in regard to the expression of emotions in man and the lower animals, &c. I have not time or opportunities to make experiments, but it seems to me something might be made of this by photographing the faces of different animals, different races of mankind, &c. I think a stereoscopic view of one of the ape tribe and some low caste human face would make a very curious mixture; also in the matter of crossing of animals and the resulting offspring. It seems to me something also might result in photos of husband and wife and children, &c. In any case, the results are curious, if it leads to nothing else. Should this come to anything you will no doubt acknowledge myself as suggesting the experiment, and perhaps send me some of the results. If not likely to come to anything, a reply would much oblige me.”

“Yours very truly,

“A. L. AUSTIN, C.E., F.R.A.S.”

Dr. Carpenter informs me that the late Mr. Appold, the mechanician, used to combine two portraits of himself under the stereoscope. The one had been taken with an assumed stern expression, the other with a smile, and this combination produced a curious and effective blending of the two.

Convenient as the stereoscope is, owing to its accessibility, for determining whether any two portraits are suitable in size and attitude to form a good composite, it is nevertheless a makeshift and imperfect way of attaining the required result. It cannot of itself combine two images; it can only place them so that the office of attempting to combine them may be undertaken by the brain. Now the two separate impressions received by the brain through the stereoscope do not seem to me to be relatively constant in their vividness, but sometimes the image seen by the left eye prevails over that seen by the right, and

vice versa. All the other instruments I am about to describe accomplish that which the stereoscope fails to do: they create true optical combinations. As regards other points in Mr. Austin's letter, I cannot think that the use of a binocular camera for taking the two portraits intended to be combined into one by the stereoscope would be of importance. All that is wanted is that the portraits should be nearly of the same size. In every other respect I cordially agree with Mr. Austin.

The best instrument I have as yet contrived and used for optical superimposition is a "double-image prism" of Iceland spar. The latest that I have had were procured for me by Mr. Tisley, optician, 172, Brompton Road. They have a clear aperture of a square, half an inch in the side, and when held at right angles to the line of sight will separate the ordinary and extraordinary images to the amount of two inches, when the object viewed is held at seventeen inches from the eye. This is quite sufficient for working with cartes-de-visite portraits. One image is quite achromatic, the other shows a little colour. The divergence may be varied and adjusted by inclining the prism to the line of sight. By its means the ordinary image of one component is thrown upon the extraordinary image of the other,

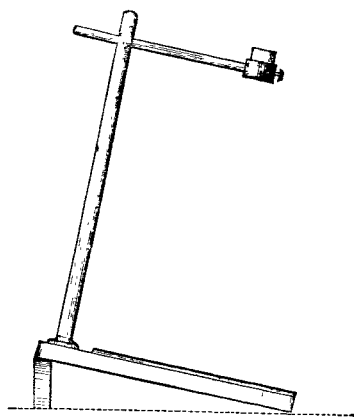


FIG. 1.

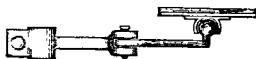


FIG. 2.



FIG. 3.

Fig. 1 shows the simple apparatus which carries the prism and on which the photograph is mounted. The former is set in a round box which can be rotated in the ring at the end of the arm and can be clamped when adjusted. The arm can be rotated and can also be pulled out or in if desired, and clamped. The floor of the instrument is overlaid with cork covered with

black cloth, on which the components can easily be fixed by drawing-pins. When using it, one portrait is pinned down and the other is moved near to it, overlapping its margin if necessary, until the eye looking through the prism sees the required combination; then the second portrait is pinned down also. It may now receive its register-marks from needles fixed in a hinged arm, and this is a more generally applicable method than the plan with cross threads, already described, as any desired feature—the nose, the ear, or the hand, may thus be selected for composite purposes. Let A, B, C, . . . X, Y, Z, be the components. A is pinned down, and B, C, . . . X, Y, Z; are successfully combined with A, and registered. Then before removing Z, take away A and substitute any other of the already registered portraits, say B, by combining it with Z; lastly, remove Z and substitute A by combining it with B, and register it. Fig. 2 shows one of three similarly jointed arms, which clamp on to the vertical rod. Two of these carry a light frame covered with cork and cloth, and the other carries Fig. 3, which is a frame having lenses of different powers set into it, and on which, or on the third frame, a small mirror inclined at 45° may be laid. When a portrait requires foreshortening it can be pinned on one of these frames and be inclined to the line of sight; when it is smaller than its fellow it can be brought nearer to the eye and an appropriate lens interposed; when a right-sided profile has to be combined with a left-handed one, it must be pinned on one of the frames and viewed by reflection from the mirror in the other. The apparatus I have drawn is roughly made, and being chiefly of wood is rather clumsy, but it acts well.

and the composite may be viewed by the naked eye, or through a lens of long focus, or through an opera-glass (a telescope is not so good) fitted with a sufficiently long draw-tube to see an object at that short distance with distinctness. Portraits of somewhat different sizes may be combined by placing the larger one further from the eye, and a long face may be fitted to a short one by inclining and foreshortening the former. The slight fault of focus thereby occasioned produces little or no sensible ill-effect on the appearance of the composite.

The front and profile faces of two living persons sitting side by side or one behind the other, can be easily superimposed by a double-image prism. Two such prisms set one behind the other can be made to give four images of equal brightness, occupying the four corners of a rhombus whose acute angles are 45° . Three prisms will give eight images, but this is practically not a good combination; the images fail in distinctness, and are too near together for use. Again, each lens of a stereoscope of long focus can have one or a pair of these prisms attached to it, and four or eight images may be thus combined.

Another instrument I have made consists of a piece of glass inclined at a very acute angle to the line of sight, and of a mirror beyond it, also inclined, but in the opposite direction to the line of sight. Two rays of light will therefore reach the eye from each point of the glass; the one has been reflected from its surface, and the other has been first reflected from the mirror, and then transmitted through the glass. The glass used should be extremely thin, to avoid the blur due to double

reflections; it may be a selected piece from those made to cover microscopic specimens. The principle of the instrument may be yet further developed by interposing additional pieces of glass, successively less inclined to the line of sight, and each reflecting a different portrait.

I have tried many other plans; indeed the possible methods of optically superimposing two or more images are very numerous. Thus I have used a sextant (with its telescope attached); also strips of mirrors placed at different angles, their several reflections being simultaneously viewed through a telescope. I have also used a divided lens, like two stereoscopic lenses brought close together, in front of the object class of a telescope.

I have not yet had an opportunity of superimposing images by placing glass negatives in separate magic lanterns, all converging upon the same screen; but this or even a simple dioramic apparatus would be very suitable for exhibiting composite effects to an audience, and, if the electric light were used for illumination, the effect on the screen could be photographed at once. It would also be possible to construct a camera with a long focus, and many slightly divergent object glasses, each throwing an image of a separate glass negative upon the same sensitised plate.

The uses of composite portraits are many. They give us typical pictures of different races of men, if derived from a large number of individuals of those races taken at random. An assurance of the truth of any of our pictorial deductions is to be looked for in their substantial agreement when different batches of components have been dealt with, this being a perfect test of truth in all statistical conclusions. Again, we may select prevalent or strongly-marked types from among the men of the same race, just as I have done with two of the types of criminals by which this memoir is illustrated.

Another use of this process is to obtain by photography a really good likeness of a living person. The inferiority of photographs to the best works of artists, so far as resemblance is concerned, lies in their catching no more than a single expression. If many photographs of a person were taken at different times, perhaps even years apart, their composite would possess that in which a single photograph is deficient. I have already pointed out the experience of Mr. Appold to this effect. The analytical tendency of the mind is so strong that out of any tangle of superimposed outlines it persists in dwelling preferably on some one of them, singling it out and taking little heed of the rest. On one occasion it will select one outline, on another a different one. Looking at the patterns of the papered walls of our room, we see, whenever our fancy is active, all kinds of

forms and features. We often catch some strange combination which we are unable to recall on a subsequent occasion, while later still it may suddenly flash full upon us. A composite portrait would have much of this varied suggestiveness.

A further use of the process would be to produce from many independent portraits of an historical personage the most probable likeness of him. Contemporaneous statues, medals, and gems would be very suitable for the purpose; photographs being taken of the same size, and a composite made from them. It will be borne in mind that it is perfectly easy to apportion different "weights" to the different components. Thus, if one statue be judged to be so much more worthy of reliance than another that it ought to receive double consideration in the composite, all that is necessary is to double either the time of its exposure or its illumination.

The last use of the process that I shall mention is of great interest as regards inquiries into the hereditary transmission of features, as it enables us to compare the average features of the produce with those of the parentage. A composite of all the brothers and sisters in a large family would be an approximation to what the average of the produce would probably be if the family were indefinitely increased in number, but the approximation would be closer if we also took into consideration those of the cousins who inherited the family likeness. As regards the parentage, it is by no means sufficient to take a composite of the two parents; the four grandparents and the uncles and aunts on both sides should be also included. Some statistical inquiries I published on the distribution of ability in families* give provisional data for determining the weight to be assigned in the composite to the several degrees of relationship. I should, however, not follow those figures in the present case, but would rather suggest, for the earlier trials, first to give equal "weights" to the male and female sides; thus the father and a brother of the male parent would count equally with the father and a brother of the female parent. Secondly, I should "weight" each parent as four, and each grandparent and each uncle and aunt as one; again, I should weight each brother and sister as four, and each of those cousins as one who inherited any part of the likeness of the family in question. The other cousins I should disregard. The weights as previously mentioned would be bestowed by giving proportionate periods of exposure.†

* "Hereditary Genius," p. 317, column D. Macmillan. 1869.

† Example:—There are 5 brothers or sisters and 5 cousins, whose portraits are available: the total period of desired exposure is 100 seconds, $5 \times 4 + 5 = 25$; $\frac{100}{25} = 4$; which gives $4 \times 4 = 16$ seconds for each brother or sister, and 4 seconds each cousin ($5 \times 16 + 5 \times 4 = 100$).

Composites on this principle would no doubt aid the breeders of animals to judge of the results of any proposed union better than they are able to do at present, and in forecasting the results of marriages between men and women they would be of singular interest and instruction. Much might be learnt merely by the frequent use of the double-image prism as described above, which enables us to combine the features of living individuals when sitting side by side into a single image.

I have as yet had few opportunities of developing the uses of the composite photographic process, it being difficult, without much explanation, to obtain the requisite components. Indeed, the main motive of my publishing these early results is to afford that explanation, and to enable me to procure a considerable variety of materials to work upon. I especially want sets of family photographs all as nearly as possible of the same size and taken in the same attitudes. The size I would suggest for family composites is that which gives four-tenths* of an inch (or say 10 millimetres) interval between the pupil of the eye and the line that separates the two lips. The attitudes, about which there can be no mistake, are full face, an exact profile (say, always showing the *right* side of the face), and an exact three-quarters, always showing the left; in this the outer edge of the right eyelid will be only just in sight. In each case the sitter should look straight before him. Such portraits as these go well into cartes de visite, and I trust that not a few amateur photographers may be inclined to make sets of all the members of their family, young and old, and of both sexes, and to try composites of them on the principles I have described. The photographs used for that purpose need not be in the least injured, for the register marks may be made in the case into which they are slipped, and not in the photographs themselves.

DISCUSSION.

SIR EDMUND DUCANE said: I had no intention of making observations on the lecture given Mr. Galton, but as I have been called on, I will explain my connection with the observations on making which, as Mr. Galton has explained, his experiments originated. In considering how best to deal with and repress crime, it occurred to me that we ought to try and track it out to its source and see if we cannot check it there instead of waiting till it has developed and then striking at it. To track crime to its source we must follow up the history of those who practise it, and specially in such lines as are likely (as has been alleged) to contain the true clue to their criminal

* I said *half-an-inch* in the original paper, but have since, for various reasons, adopted four-tenths of an inch instead, as my standard size.—August, 1878.

career. Among these subjects for observation that of the hereditary disposition is one of the most important, and to disentangle the effect of this from the effect of the bringing up. Mr. Galton very kindly undertook to try and ascertain if anything could be established on these points, and I therefore furnished him with the particulars of the personal characteristics and career of a great number of criminals and with their photographs. It seems to me to be a correct inference that if criminals are found to have certain special types of features, that certain personal peculiarities distinguish those who commit certain classes of crime; the tendency to crime is in those persons born or bred in them, and either they are incurable or the tendency can only be checked by taking them in hand at the earliest periods of life. Mr. Galton's process would help to establish this point, because if there is any such distinguishing feature it would come out in his mixed photographs in a clear line, whereas in those features which do not correspond the lines would be more or less blurred. I should anticipate that a great number of those who commit certain classes of crimes would be found to show an entirely inferior mental and bodily organisation; but on the other hand a very large number of criminals are rather superior in intelligence; so much so that I was quite recently informed by Colonel Pasley, the Director of Admiralty Works, that his observation was that convicts picked up a knowledge of a new trade with much greater rapidity than free workmen. In fact, it is often misplaced and unbalanced cleverness that leads to the attempt to commit crime, and this characteristic might very probably be found in the features of criminals of this class.

Mr. CORNELIUS WALFORD, after expressing his interest in the subject under discussion, drew attention to the fact that changes of location and of climate, possibly also of food, tended very materially to alter family and even national types of facial expression. As an instance, children of Irish parents born in the United States present usually quite a classical form of face, notwithstanding that the parents, in many cases, bore the strongest marks of nationality. Sir Charles Dilke, in his "Greater Britain," says that the same thing takes place in the Australian Colonies. It seems clear from this that even criminal types will not hold good under all circumstances. He did not quite know how this might affect Mr. Galton's theory. He also thought that experimenting upon a number of persons tended rather to generalise than to particularise the expression. These remarks were to be regarded as suggestions only.

Mr. ROBERT DES RUFFIÈRES said: Mr. Galton's paper on "Composite Portraits" is both curious and suggestive, and may perhaps lead to important results in time to come. As it is, the author considers his discovery may be turned to good account in several ways, and notably as a means of comparing the average features of a family with those of its near ancestry. If I recollect rightly, Mr. Galton laid great stress on the eyes as one of the most important features, and especially in connection with his views, and no doubt with good reason; but it should not be forgotten that the

month also is a very characteristic feature, and it is not many years ago that a celebrated French painter undertook to show that it was possible to group the several personages of a historical picture, in such a way as to bring visibly before the mind of the spectator the passing scene, and that without the eyes of any of the *dramatis personæ* being visible. Mr. Galton's discovery has been spoken of elsewhere as a toy, but the same was said at the time of the Kaleidoscope, which has done such good service in the Arts, and very recently of the Radiometer, which it has been shown can be successfully applied in Climatology for testing gas-light, and other purposes.

Mr. HYDE CLARKE said it was necessary to accept Mr. Galton's results under the reservations and conditions he had imposed. Otherwise there was a danger of adopting wrong conclusions, as a mean or average did not represent a natural fact, but was an artificial term. Thus in the examples before them the criminal characteristics were eliminated, and they had a natural type of man instead. Thus, instead of a typical figure or a distinctive type, only an average was obtained. With regard to the question which had been raised as to change of character in America, he had termed the phenomena Creolism. Some men and animals underwent change and removal from one district to another, and it was recorded that in India some horses died by simple removal. It was remarkable that the phenomena known to us as "Yankeesim" were common to the United States and Australia. In the case of an emigrant bringing children of English type, then one child subsequently born might be of American type and another of English type. This appeared to affect English and Celts, but he had not traced it to Spaniards. It was to be observed that all Americans had not the Yankee type, but that many had a thorough English type. This showed that Creolism is not purely an influence of soil. Further, the Yankee type was produced in England, but rarely. There were various influences of removal, as, for instance, the effect on the skin and eyes of our African travellers.

The following paper was read by the Author.

The ORIGIN of the CLASSIFICATORY SYSTEM of RELATIONSHIPS used among PRIMITIVE PEOPLES. By C. STANILAND WAKE, M.A.I.

THE author of the elaborate work on the systems of consanguinity and affinity in use among the several branches of the human race, published in 1871 by the Smithsonian Institute, has shown that the Turanian, the Ganowanian (American Indian), and the Polynesian families of mankind, instead of using a descriptive system of relationships, such as that found among the more cultured peoples, class together *consanguinei*

by what might seem to be mere arbitrary generalisations applying a common term to all the members of a particular class.

According to this *classificatory* system, in its most primitive form as known to us, and as still used among the Hawaiians of the Sandwich Islands, a man's relations are thus described :—

Grandfather	}	Grandparent male, grandfather, <i>in next stage.</i>
Grandmother's brother		
Grandfather's „		

Grandmother	}	Grandparent female, grandmother, <i>in next stage.</i>
Grandfather's sister		
Grandmother's „		

Father	}	Parent male, father, <i>in next stage.</i>
Mother's brother		
Father's „		

Mother	}	Parent female, mother, <i>in next stage.</i>
Father's sister		
Mother's „		

Mother's brother's child	}	Brother or sister (elder or younger).
Father's „		
Father's sister child „		
Mother's „ „		

Mother's brother's son's child	}	Child (male or female).
Father's „ „ „		
Father's sister's „ „		
Mother's „ „ „		
Brother's child		
Sister's „		

Mother's brother's son's grandchild	}	Grandchild (male or female).
Father's „ „ „		
Father's sister's „ „		
Mother's „ „ „		
Brother's grandchild		
Sister's „		

The special peculiarity of this system will be seen at a glance if these various persons are arranged in grades thus :—

<i>Grand-parent</i> (male or female)	Grandfather's sister	Grandfather's brother	Grandfather		Grandmother	Grandmother's brother	Grandmother's sister
<i>Parent</i> (male or female)	Father's sister	Father's brother	Father		Mother	Mother's brother	Mother's sister
<i>Brother or Sister</i>	Father's sister's child	Father's brother's child	Brother	Ego	Sister	Mother's brother's child	Mother's sister's child
<i>Child</i> ..	Father's sister's child's child	Father's brother's child's child	Brother's child	Child	Sister's child	Mother's brother's child's child	Mother's sister's child's child
<i>Grandchild</i> ..	Father's sister's child's grand- child	Father's brother's child's grand- child	Brother's grandchild	Grandchild	Sister's grand- child	Mother's brother's child's grand- child	Mother's sister's child's grand- child

Thrown into this position, we see that in the primitive system under examination persons related by blood are placed in certain general classes, not according to their degree of relationship to a particular individual, but according to the generation to which they belong. This exactly answers to the Chinese "grades of relatives," as pointed out by Mr. Morgan, who says: "If we make the application, commencing with grandfather, it will be seen that my grandparents, and such kinsmen of theirs as stand to me in the relation of grandparents, form one grade or class; that my parents and such relatives of theirs as stand to me in the relationship of parents form a second grade or class; that myself, with my brothers and sisters, and my collateral brothers and sisters, form a third grade or class; that my children, and the children of my collateral brothers and sisters, form a fourth grade or class; and that my grandchildren and my collateral grandchildren form a fifth grade or class. Those of each grade stand to *Ego* in the same identical relationship, and the individuals of the same grade or class stand to each other in the relationships of brothers and sisters."*

Mr. Morgan's explanation of this system of relationship has been recently reproduced by him in a work treating of the social conditions of "Ancient Society." In the latter publication it is stated that the Malayan form of the classificatory system, as preserved among the Polynesian Islanders, "defines the relationships that would exist in a consanguine family; and it demands the existence of such a family to account for its own existence. Moreover, it proves with moral certainty the existence of a consanguine family where the system was formed."† Mr. Morgan affirms, moreover, that the Malayan system originated in "plural marriages of *consanguinei*, including own brothers and sisters; in fact, commenced with the intermarriage of the latter, and gradually enfolded the collateral brothers and sisters as the range of the conjugal system widened."‡ Elsewhere he observes that the consanguine family and the Malayan system of consanguinity presuppose antecedent promiscuity.§ I shall not at present refer particularly to this latter point, as Mr. Morgan himself admits that the existence of the prior state of promiscuity is merely an inference,|| and if it can be shown that the consanguine family has not existed as a recognised social institution, the earlier sexual condition may be assumed to be equally mythical.

* "Systems of Consanguinity, &c.," p. 155

† "Ancient Society," p. 402.

‡ *Ibid.* p. 408.

§ *Ibid.* p. 501.

|| *Ibid.* p. 418.

What, then, we have to consider is the consanguine family, arising from the intermarriage of brothers and sisters, evidence of the former existence of which Mr. Morgan finds in that of the Malayan system of relationships itself. He supports this evidence, moreover, by the statement that in the time of the first American missionaries, brothers and sisters intermarried among the Sandwich Islanders without reproach. If this statement were strictly true, it would be of essential service to Mr. Morgan's argument, but its value is materially lessened by the remark made by one of the missionaries to the effect that the union of brother and sister in the highest ranks became fashionable.* This may have been so at a comparatively recent date, but the practise probably originated in the custom mentioned by Mr. Jarves, according to which the highest chief was obliged to marry the next woman in rank to himself, whatever their relationship.† The object of this custom is explained by Admiral Wilkes, who states that such marriages were entered into by the king for the purpose of preventing competition to the throne. This writer adds, nevertheless, that it is, "in other cases, contrary to the customs, habits, and feelings of the people,"‡ although in the decayed condition of Hawaiian society§ it is not improbable that the lower chiefs imitated the conduct of their sovereign. Mr. Morgan, however, refers to another custom which appears to him to furnish actual evidence of the former existence of the consanguine family among the Sandwich Islanders. The American missionaries found in operation among them a peculiar marriage custom according to which two or more brothers with their wives, or two or more sisters with their husbands, lived in common. Such an association constituted the *Pānalūan* family, which, says Mr. Morgan, was evidently formed out of the consanguine family. Brothers had, however, ceased to marry their own sisters; "and, after the gentile organisation had worked upon society its complete results, their collateral sisters as well. But in the interval they shared their remaining wives in common. In like manner, sisters ceased marrying their own brothers, and after a long period of time their collateral brothers; but they shared their remaining husbands in common."|| This is Mr. Morgan's interpretation of the phenomena in question, but the *Pānalūan* group can be accounted for satisfactorily without assuming the prior existence of the consanguine family. It is true Mr. Morgan

* "Ancient Society" p. 415.

† "History of the Hawaiian Islands," p. 80

‡ "United States Exploring Expedition," Vol. iv, p. 32.

§ Wilkes, *op. cit.*, Vol. iv., pp. 32-45.

|| "Ancient Society," p. 428.

affirms that own brothers and sisters were not entirely excluded from the former, but he does not furnish evidence in support of the statement. Even if true, the fact might be explained as exceptional, and as due to the deprivation of manners referred to by Admiral Wilkes. The relationship of *Pānalūa* depends merely on several brothers and their wives, or several sisters and their husbands living in common, and there is no reason why this fact should presuppose the intermarriage at an earlier period of brothers and sisters, and communism in their sexual relations. It is evident, on consideration, that the two customs are totally distinct, and that while the former is perfectly consistent with the general rule as to marriage, founded on the incapacity of such a relation being established between persons bearing the same family or clan name, the latter is utterly opposed to it. There is nothing in the early rules of marriage opposed to the primitive custom of a man marrying several women, whether sisters or not, of a different clan from his own. Such a custom is indeed common with the North American tribes, in many of which a man can claim all the sisters of his wife as they reach a marriageable age, which Mr. Morgan supposes to be a relic of the *Pānalūan* family.* We are not concerned at present with the origin of this family, but only with its incidents, and seeing that the peoples among whom it was found fully recognised the important principle of kinship through females,† which is the basis of the gentile organisation, it is extremely improbable that they allowed, except under special circumstances, marriages between brothers and sisters of the whole blood—that is, children bearing the same family name. It is very different, however, where a man and woman, although having the same father, are born of different mothers. In this case the ideas which are at the foundation of the classificatory system would not operate to render unlawful a union between the persons thus related. In accordance with this fact, we find that marriage between half-brothers and half-sisters has been customary among peoples of all degrees of civilization. This practice is, according to the first principles of the classificatory system, perfectly innocent, and like the *Pānalūan* custom of intermixed polygamous and polyandrous marriage, furnishes absolutely no evidence of the prior existence of marriage between brothers and sisters of the whole blood.

* "Ancient Society," p. 432.

† *Ibid.* pp. 433, 515. Among both the Hawaiians and the Tongans rank descended chiefly through females—See Jarves, *op. cit.* p. 84. Also Mariner's "Tonga and the Tongans," Vol. ii., pp. 84, 96.

If this conclusion be correct, it is evident that the Malayan system of consanguinity and affinity, instead of furnishing, as Mr. Morgan supposes, conclusive proof of the prior existence of the consanguine family, must have an entirely different meaning. What this is I shall now proceed to show. Mr. Bingham is quoted by Mr. Morgan as stating, with reference to the Hawaiians, that the terms of relationship are "so loosely used that in common conversation I am often much puzzled to know who is referred to, until I have put specific questions."* A similar remark has been made in relation to the Malagasy, among whom, says a late writer, "it is often difficult to ascertain exactly the relationship of members of a family, for first cousins are usually termed brother and sister, and uncles and aunts—father and mother respectively; and it is only by asking distinctly of persons whether they are 'of one father,' or are uterine 'brother or sister,' that we learn the exact degree of relationship. These secondary fathers and mothers seem often to be regarded with little less affection than the actual parents."† Mr. Morgan would see in this a reference to his consanguine family, but there is another fact which is quite inconsistent with such a view. In the more advanced *Pānalūan* family (he says), brothers had ceased to marry their own sisters, although they shared their remaining wives in common;‡ but in the Malagasy system the marriage restrictions are much more stringent. By these, marriage is forbidden between a brother and sister of the same father and mother, or between any of their children or grandchildren. It is also forbidden between the children and descendants of two sisters by the same mother to the sixth generation, or rather to the seventh generation including the common ancestor.

These regulations are based on consanguinity, and appear to be framed for the purpose of preventing marriages between near blood relations. They reveal, moreover, a system of relationship perfectly analogous to the grades of relations of the Sandwich Islanders; somewhat more extended, certainly, as it embraces seven generations instead of five. This may not have been so originally, however, as the two last generations take special titles, owing possibly to their having been included subsequently to the formation of the system.§ As a system based on marriage restrictions, nevertheless, that of the Malagasy is imperfect in the male line, seeing that the descendants of the grandchildren

* "Systems of Consanguinity, &c.," p. 461.

† Sibree's "Madagascar and its People," p. 192.

‡ "Ancient Society," p. 428.

§ Mr. Sibree, indeed, says that the descendants of two sisters by the same mother down to four generations do not intermarry—"Madagascar and its People," p. 192.

of a brother and sister by the same parents may freely intermarry. Mr. Ellis states, moreover, that, "collateral branches on the male side are permitted in most cases to intermarry, on the observance of a slight but prescribed ceremony, which is supposed to remove the impediment or disqualification arising out of consanguinity."* It would seem, therefore, that the Malagasy at one time viewed consanguinity, arising from the descent from a common *female* ancestor, as a bar to intermarriage, while, as among the collateral relations on the male side, the consanguinity being considered weak, it was not treated as an absolute disqualification. This result is due to the influence over the Malagasy mind of the primitive custom of tracing kinship through the mother, which is still seen in the fact that the genealogy of the sovereign and the nobles are traced by the female and not by the male line. This, Mr. Ellis thinks, proceeds on "the supposition of its being impossible in any given case to ascertain with certainty the male parent of a child, or that parentage is more easily and more obviously identified on the mother's than on the father's side." This may not be the actual reason, but Mr. Ellis remarks of the Malagasy, "their sensuality is universal and gross, though generally concealed; continence is not supposed to exist in either sex before marriage, consequently it is not expected, and its absence is not regarded as a vice."† We have here an example of a people exhibiting, like the Polynesian Islanders, the utmost laxity in sexual conduct, and yet possessing stringent regulations for the prevention of intermarriage of blood relations. Moreover, while still adhering for some purposes to the primitive idea of kinship being dependent on descent from a common female ancestor (although marriages between brother and sister by different mothers are not allowed), children inherited from their fathers, and relationship through the father, was actually recognised. This confirms what is evident from the passage already cited from Mr. Sibree's work, that the Malagasy have the same classification of relations in grades as that which is exhibited by the Malayan system of the Hawaiians. We are justified, therefore, in assuming that, as the former is accompanied by restrictions intended to prevent the intermarriage of individuals included within those grades, the same is true also of the latter system. This assumption is totally different from, and, in fact, is quite opposed to, that required by Mr. Morgan's theory. This has for its aim, however, the explanation of the classificatory system of consanguinity and affinity, and not the proof of the existence of the consanguineous family. If, therefore, the former can be ac-

* "History of Madagascar," Vol. i., p. 164.

† *Ibid.*, Vol. i., p. 137.

counted for without reference to such a family, there is no reason why it should not be associated with, if not based on, marriage restrictions.

Before proceeding to show the real origin of the classificatory system, it is necessary to consider Mr. Morgan's statement that the Hawaiians did not rise to the conception of a *gens*, which is later than the first appearance of the *Pānalūan* family,* on which their system of relationship is supposed to be dependent. According to the American writer, the *gens* "embraced all such persons as traced their descent from a supposed common female ancestor, through females, the evidence of the fact being the possession of a common gentile name." It did not include *all* the descendants of the common ancestor, because "the children of her sons, and the children of her male descendants, though males, would belong to other gentes, namely, those of their respective mothers."† The *gens* of Mr. Morgan is, however, something more than a large association of persons having a common female ancestor. It is a social organisation having certain "rights, privileges, and obligations conferred and imposed upon its members, and which made up the *jus gentilicium*."‡ When, therefore, Mr. Morgan speaks of the *gens*, it is clear that he refers, not to a mere family group, but to a developed institution, which he describes as "a gentile society (*societas*) as distinguished from a political society or state (*civitas*)." The origin and base of this society is, however, the simple "body of consanguinei bearing a common gentile name;"§ and we cannot doubt that wherever this exists, the gentile institution will be developed, if it is required by the conditions of social existence. Its non-development is, in fact, evidence of the non-existence of those conditions, and we must suppose, therefore, that the Polynesian peoples have not risen to the conception of the *gens*, because the tribal organisation which they exhibit is more fitted to their circumstances. Among all of them this organisation had become established when they were first visited by Europeans. In the Sandwich and Society Islands the government was an arbitrary monarchy, the supreme authority being vested in the king and hereditary in his family.|| The respect shown for the sovereign was remarkable. The king and queen were looked upon as almost divine, and everything belonging to them became sacred: even the men who carried them and the

* "Ancient Society," p. 434.

† *Ibid.* p. 67.

‡ *Ibid.* p. 71.

§ *Ibid.* p. 66.

|| Ellis' "Polynesian Researches," Vol. iii., pp. 93, 99; and see Jarves' "History of the Hawaiian Islands," p. 32.

ground they touched.* Moreover, the power of the chiefs of the districts into which the Islands were divided was even greater than that of the king over the whole. The lives, as well as the property of the people, were at their disposal.† The *tapu* was the great weapon of sovereign authority, and the sacred character of the chief on which it was based would almost lead us to believe that the Polynesian peoples had passed through a political stage far in advance of that which they now exhibit. Not only was the tribal organisation firmly established among them, but, judging by the property test provided by Mr. Morgar himself, their general culture was superior to that of the gentile Americans. The latter have only among the most advanced tribes substituted, in relation to cultivated land, an exclusive inheritance in children in the place of the earlier gentile inheritance,‡ whilst the Polynesian peoples appear to have long since reached the higher stage. The Rev. Wm. Ellis states in his "Polynesian Researches," that "the *bue raatira*, gentry and farmers, has ever been the most numerous and influential class, constituting at all times the great body of the people and the strength of the nation. They were generally the proprietors and cultivators of the soil, and held their land, not from the gift of the king, but from their ancestors."§ It would seem as though the Polynesian Islanders had possessed much the same political and social organisation as the Japanese exhibited before this race became subjected to the influences of Chinese culture, feudal institutions being established by warlike conquerors among a people whose ideas in relation to sexual conduct were of a very primitive character. Admiral Wilkes expressly declares that from the earliest period of Hawaiian history the tenure of lands has been, in most respects, feudal, and that "the origin of the fiefs was the same as in the northern nations of Europe." The actual cultivator of the land could at any moment be dispossessed by his chief, but self-interest, and a certain sense of propriety, says Wilkes, prevented such a step, so that those possessing farms were seldom disturbed.||

The perfect development of the tribal organisation among the Polynesian Islanders, and the absence of the clan institution, would lead us to expect the recognition by them of kinship through males, either in combination with, or in substitution for,

* Jarves' "History of the Hawaiian Islands," p. 101 *seq.*

† *Ibid.* p. 120.

‡ "Ancient Society," p. 531.

§ Vol. iii., pp. 96, 115. The New Zealanders appear, however, to be in the same stage as the less advanced American tribes. (See Taylor, *op. cit.* p. 355.) In the Society Islands, on the other hand, the power of devising land by will was established before the arrival of the missionaries. (Ellis, *op. cit.*, Vol. iii., p. 115.)

|| "United States Exploring Expedition," Vol. iv., p. 34.

that through females. Mr. Morgan, indeed, affirms the Malayan system of consanguinity shows "plainly and conclusively that kinship through males was recognised as constantly as kinship through females. A man had brothers and sisters, grandfathers and grandmothers, grandsons and granddaughters, traced through males as well as through females." He adds, however, "the maternity of children was ascertainable with certainty, while their paternity was not: but they did not reject kinship through males because of uncertainty, but gave the benefit of the doubt to a number of persons; probable fathers being placed in the category of real fathers, probable brothers in that of real brothers, and probable sons in that of real sons."* If the explanation given by Mr. Morgan of the Hawaiian system of relationship were correct, the reason here assigned for the recognition of the kinship through males would probably be sufficient. It is not, however, consistent with the social phenomena presented by the peoples among whom that system is prevalent. Thus it is remarkable that in the Society Islands, notwithstanding the absolute power of the king, his authority lasted only so long as he had no son to occupy the throne. On the birth of a son the sovereign invariably abdicated, the royal name was conferred on the infant, and his father was the first to do him homage by saluting his feet and declaring him king. This practice was not confined to the royal family, but was customary also among the nobility and the *ruatiras*, in both which classes, says Ellis, "the eldest son, immediately at his birth, received the honours and titles which his father had hitherto borne."† This writer supposes that the practice was adopted to secure a son the undisputed succession to his father's dignity and power. Probably the real object was to hinder the operation of the primitive regulation according to which a man's heirs were his sister's children. The tribal organisation would have a tendency to heighten the respect for the male parent at the expense of the female, and thus, although among the Hawaiians rank descended chiefly through females, on the whole, women occupied a very inferior social position. Ellis says that the father was magistrate in his own family, and he alone ever exercised any control over his children; "the mother was always disregarded, and the father has often encouraged them to insult and violence, while all interference of the mother has been resisted by the child."‡ Among the New Zealanders, when a man died his eldest son

* Morgan's "Ancient Society," p. 515.

† *Op. cit.* iii., 99, *seq.* Have we not a reference to this custom in the Malagasy practice of a father taking the name of his eldest son?—Sibree's "Madagascar and its Peoples," p. 198.

‡ *Op. cit.* i., 261; iii., 121. Among the Tongans also the father has absolute authority in his own household.—*Op. cit.* Vol. iii. p. 169.

took the family name which his father had held before him, the second son assuming the father's second name.* Among the Tongans, the Matabooles and the Mooas are succeeded by their sons in their dignities.† and not by their nephews as where descent is traced solely by the female line.‡ So, also, the children belong to the tribe of their father, both among the Tongans and Fijians, as appears by Mr. Fison's replies to the inquiries made by Mr. Morgan§ The rights acquired by a New Zealander in land which he has brought under cultivation, descend to his children, and the first-born son of a Maori has all the rights of primogeniture.||

These facts, which are inconsistent with uncertainty as to the paternity of the child, show also that kinship through the male is for certain purposes preferred by the Polynesian peoples to kinship through the female. Where such is the case, particularly when marriage is permitted within the tribe, as among the Polynesian Islanders,¶ certain regulations will be necessary if it is desired to prevent the intermarriage of near blood relations. Especially would this be the case where such an institution exists as that of *Pānālāo*, which allows several brothers or sisters to have their wives or husbands in common. Among the American aborigines, whose system of relationships is supposed by Mr. Morgan to be founded on the *Pānālāo* custom, there is an abhorrence of such intermarriages. Mr. Morgan states that "the structure and principles of the organisation (into gentes) tended to create a prejudice against the marriage of consanguinei, as the advantages of marriages between unrelated persons were gradually discovered through the practice of marrying out of the gens." He adds: "This seems to have grown apace until a public sentiment was finally arrayed against it, which had become very general among the American aborigines when discovered."** Such a sentiment is strongly developed among the West Africans, whose system of relationship probably agrees closely with the Malayan,†† and who, as appears from a statement made by Du Chaillu, quoted by Mr. Morgan,‡‡ consider the least consanguinity an abomination where marriage is concerned. Even the aborigines of Australia have a similar abhor-

* Taylor.—*Op. cit.* p. 326.

† Mariner.—*Op. cit.* Vol. ii., p. 86.

‡ If a wife is superior to her husband in rank, he has however to show her proper respect.—Mariner, Vol. ii., p. 92

§ "Systems of Consanguinity, &c," p. 579.

|| *Op. cit.* p. 338-355.

¶ Such is the case with the New Zealanders. (See Taylor, *op. cit.* p. 413.)

** "Ancient Society," p. 458.

†† *Ibid.* p. 463.

‡‡ *Ibid.* p. 371.

rence of consanguinous marriages, and the formation of this sentiment is probably due to some other cause than that assigned for it by Mr. Morgan. The prohibition of intermarriage in the *gens* no doubt limited the range of the *Pānolāan* group, as it prevented the formation of the marriage relation between any of the descendants in the female line of each ancestor within the *gens*.^{*} If, however, the gentile organisation has such an operation, it might be supposed that where, as in the Malayan system, kinship through both males and females is recognised, the restriction on intermarriage between blood relations would be still greater, and it would be so even if descent is limited to the male line only. In the one case, if a man had several wives, each belonging to a different *gens*, his children by one wife would primitively be allowed to intermarry with those of another wife: as they would belong to different gentes. But in the other case, as all the children take the name of their father, none of them would be permitted to intermarry. We have an example of this with the Chinese, among whom "custom and law alike prohibit intermarriage on the part of people bearing the same family surname."[†] Now this is a most important case, because not only do the Chinese, like the Polynesian peoples, recognise kinship through both father and mother,[‡] while preferring that through the male for the purpose of tracing descent, but they have a classification of relations answering almost exactly to the five grades of relations of the Malayan system. Mr. Hart supposes the Chinese system of relationship to have had its origin in the cradle lands of humanity, when "each successive birth was considered as increasing the *one* family, and as being in relationship with every individual composing that family."[§] Such an original is to be found in the Malayan system, which, therefore, we shall be justified in explaining by the light of that of the Chinese. The fundamental idea on which the latter system is based is, that all the descendants of a male ancestor are consanguineal, and therefore that they ought not to be allowed to intermarry. The common ancestor becomes the starting point in tracing descent, and all his descendants are ranged together in categories according to the position they occupy in the line of descent, and hence all the persons in each generation, whatever their actual relationship to each other, are classed together under a common term. For all practical purposes the Chinese

* "Ancient Society," p. 458.

† Morgan's "Systems of Consanguinity, &c.," p. 424, *note*.

‡ For a reference to female relationship among the Chinese, see "Systems of Consanguinity, &c.," p. 425, *note*.

§ *Ibid.* p. 425. *note*.

system recognises only nine grades of relations, being that of *Ego* with four generations above and below him, and therefore the restriction as to marriage may have originally applied only within those limits.* The nine generations of the Chinese are equivalent to the five grades of the Malayan system, which include that of *Ego* with two below and two above him, instead of four, as in the Chinese system. In the latter, however, a grandfather is called "ancestral father," and a grandmother "ancestral mother," a great grandfather being an "additional ancestor," and a great grandmother, a "more remote ancestral mother," which answers almost exactly to the Hawaiian custom.

The analogy between the Chinese and Malayan systems of consanguinity is so exact, we cannot doubt that the latter as well as the former has the regulation of marriage for its aim. In fact, as already mentioned, the Malagasy form of the Malayan system is associated with restrictions on marriage, such as we should expect to find among the Polynesian peoples. The reference to a common ancestor which gives the classification of relations in grades, and which has no meaning in Mr. Morgan's theory, except so far as it is supposed to reveal "a condition of promiscuous intercourse, involving the cohabitation of brothers and sisters, and perhaps of parent and child,"† would more probably therefore be intended to identify the individuals between whom marriage is *not* allowable, or at least to exclude from marriage possibility the blood relations included within the grades. It is strange that, while so carefully classifying all the relationships acknowledged by various primitive peoples, Mr. Morgan has ascertained little as to the marriage restrictions with which the systems of consanguinity are connected. That these are of fundamental importance is shown by the fact that among the Australians, the people whom Mr. Morgan places the lowest in the scale of humanity as exhibiting an organisation of society on the basis of sex, the system of consanguinity is connected with an elaborate series of marriage regulations, which we cannot doubt are really intended to prevent marriages between near blood relations. This has so important a bearing on the whole subject of the origin of the peculiar system treated of by Mr. Morgan that I shall proceed to consider the Australian phase of it more at length.

Mr. Morgan states that the "organisation upon sex has not been found, as yet, in any tribes of savages out of Australia," and he affirms that "the Australians rank below the Polynesians, and far below the American aborigines. They stand below the African negro and near the bottom of the scale. Their social

* "Systems of Consanguinity, &c.," p. 423, *note*.

† *Ibid.* p. 461.

institutions, therefore, must approach the primitive type as nearly as those of any existing people.* This seems hardly consistent with the statement that the *gens* or clan was unknown among the Polynesian peoples, although fully recognised by the Australians. It is still less so with the fact that, while the former race have only got so far as to distinguish *brother* and *sister* from the other members of the child grade, the latter not only recognise the relationship of *nephew* and *niece*, but also that of *cousin*, which belongs to a somewhat advanced phase of the classificatory system. Mr. Morgan bases his argument as to the primitive nature of the Australian system upon the assumption that the oldest division of the people was into classes, which consist of four great primary groups of brothers and sisters, each group being composed of a male and female branch. The classes, he adds, embody the germ of the *gens*, but they are accompanied with a regulation in accordance with which marriage is "restricted to a portion of the males of one *gens*, with a portion of the females of another *gens*, which is opposed to the true theory of the gentile institution, for all the members of each *gens* should be allowed to marry persons of the opposite sex in all the gentes except their own."†

It must be noticed, however, that originally among the Kamilaroi, whom Mr. Morgan takes as representative of the Australian tribes, there were only two gentes,‡ and therefore primitively every member of one *gens* could marry with every member of the other *gens*, assuming that the division into classes did not then exist. This assumption, no doubt, is not consistent with the theory under consideration, which requires that the division into classes should have preceded the *gens*. Mr. Morgan, however, supposes that each *gens* is made up theoretically of the descendants of two supposed female ancestors, and it is quite possible that the limitation as to marriage he refers to may have arisen from the addition of the class division to the gentile organisation, rather than the reverse, as I shall proceed to show.

The chief class among the Kamilaroi is said by Mr. Ridley to be the Murri, and we will assume, therefore, that the two original clans or gentes were those into which Murri is now divided—*Duli* (Iguana) and *Murriira* (Paddymelon).§ The members of these two gentes, although belonging to the same class, are allowed to intermarry so long as the male and female belong to a different *gens*, and all the children of these marriages follow the *gens* of their mother. If, now, the Australian

* "Ancient Society," p. 51.

† *Ibid.* p. 52.

‡ *Ibid.* p. 57.

§ A species of Kangaroo

relationships are placed together as shown in diagram A,* we shall see that, while the division into grades of relations which subsists among the Hawaiians is really at the foundation of the Australian system, the latter, so far from being of the barbarous nature supposed by Mr. Morgan, is far advanced, and in the division into classes gives evidence of elaborate organisation. An examination of the diagram in which *Murri* (Ego) marries *Butha*, shows, on comparing the names which denote to what class the several individuals belong, that, with a single exception, all those bearing a common class title in the same grade stand in the same degree of relationship to *Ego*. Thus *Murri* and *Matha* are brothers and sisters, *Kumbo* and *Butha* cousins, *Ippai* and *Ippatha* sons and daughters, *Kubbi* and *Kubbotha* nephews and nieces. The exception is in the parental grade, but it is explicable according to the principle that women belonging to different classes must stand in a different relationship to *Ego* among themselves, this being true also of men in the same grade. The consequence of this rule is, that the mother's brother being of a different class to her husband, the former must be "uncle" to *Ego*, while the father's sister belonging to a different class from that of his wife must be "aunt" to *Ego*. The diagram above referred to shows the *female* stem, but the same phenomena are exhibited by a diagram (B),† showing the *male* stem according to the Australian system, except that the class names are reversed in position, and instead of the mother's brother being uncle, the father's sister is aunt. Exactly the same result follows whichever member of the several subdivisions is taken as *Ego*, except that the relationships are expressed by different terms. Difference of class name denotes difference of relationship when in the same grade; in the parental grade the comparison being between mother and father's sister, and father and mother's brother.

The operation of the rules of the Australian system of classification may be explained in the following tabular form:—

EGO.	CHILDREN.	NEPHEW AND NIECE.	BROTHER AND SISTER.	COUSIN.
Murri.	Ippai and Ippatha.	Kubbi and Kubbotha	Murri and Matha	Kumbo and Butha
Kumbo	Kubbi and Kubbotha.	Ippai and Ippatha	Kumbo and Butha	Murri and Matha
Ippai.	Murri and Matha	Kumbo and Butha	Ippai and Ippatha	Kubbi and Kubbotha
Kubbi	Kumbo and Butha.	Murri and Matha	Kubbi and Kubbotha	Ippai and Ippatha

* Diagram A at end.

† Diagram B at end.

This result is arrived at on the assumption, which is correct in most cases, that—every Murri marries Butha: every Ippai marries Kubbotha; every Kumbo marries Matha: every Kubbi marries Ippatha. On the same assumption, and taking *Ego* as a female, the result is the same, except that children exchange titles with nephews and nieces.

If a man marries within his own class the relationship will not be denoted by the class name alone. This is shown, however, by the *clan* name, which will be different in the case of “sons” and “daughters,” and in that of “nephews” and “nieces.” since, although marrying within his own class, he must marry out of his clan. The effect of this is shown in a third diagram (C),* where the class to which *Ego* belongs is *Murri murriiri* and that of his wife *Matha duli*. Here we see that all the members of the grade of *Ego* belong to the Murri class, whilst all the members of the child grade are included in the Kubbi class, although belonging to different gentes. In relation to Murri, the *Murri* class is evidently merely a name denoting all the members of his own grade, and the *Kubbi* class those of the grade below him, and the terms may, therefore, be considered as equivalent to those used in the Malayan system as classifications of the members of the same grades or generations. This notion is confirmed by the fact that all the classes are included in the fraternal and filial grades of the Australian system, the two later class terms having been added to express the new relationships of cousin and nephew or niece. Mr. Morgan himself supposes that originally “there were but two male and two female classes which were set opposite to each other in respect of the right of marriage.”† By two male and two female classes is really meant two classes each divided into a male and a female branch, and they would answer to the two primitive grades of relations which is at the foundation of the classificatory system, each of which would comprise two gentes, being those of the maternal ancestors. Mr. Morgan, however, affirms that the *gens* was unknown when the organisation into classes was introduced, and that this organisation was “directed to the single object of breaking up the intermarriage of brothers and sisters.”‡ Judging from the rules of descent, which show an intimate connection between the classes and the relationships recognised in the fraternal and filial grades, it is much more probable that those rules were framed for the purpose of accurately defining the blood relationship between members of the tribe, all of whom, on the assumption of their having been

* Diagram C at end.

† “Ancient Society,” p. 56.

‡ *Ibid.* p. 58.

originally only two families, are necessarily descended from the same common ancestors. It is confirmatory of the view here taken that the application of the class terms of the Australian system is governed by the *clan* relationships already established. Thus according to diagram C, which shows the division into two classes only, the children of brothers belong to the same clan because their wives belong to the same clan, while the children of sisters belong to another clan, being that of their own mothers. Exactly the same thing occurs in connection with the classes, as is seen by reference to the diagram A, showing the descent where Murri marries Butha instead of Matha. In this case the children of brothers are Ippai and Ippatha, but those of sisters are Kubbi and Kubbotha, terms which are here equivalent to nephew and niece. Moreover, all the other members of the child grade who, according to the last-named diagram, are Kubbi and Kubbotha, belong in the other case to the same clan as the children of a sister. On the other hand, those who on the marriage of Murri with Butha are Ippai and Ippatha, are, when Murri marries Matha, referred to the same clan as the children of *Eyo* and his brothers. In the fraternal grade the same thing occurs; those who are Kumbo and Butha (cousins) in the one case, belonging in the other to a different clan from *Eyo* and those who are classed as his brothers and sisters.

It was said above that the restriction according to which a portion only of the males of one *gens* could intermarry with only a portion of the females of another *gens*, and which Mr. Morgan refers to as evidence that the *gens* is only in process of development out of the class organisation, probably arose rather from the addition of this organisation to that of the *gens*. Mr. Morgan* has made a very useful arrangement of the gentes in relation to the classes, from which it appears that the former are in pairs through the classes, as follows:—

GENTES.	MALE.	FEMALE.	MALE.	FEMALE.
1 Iguana (duh)	all are Murri and Matha	or Kubbi and Kubbotha		
2 Emu (dinoun)	„ Kumbo „ Butha	„ Ippai „ Ippatha		
3 + Kangaroo (murriira) „	Murri „ Matha	„ Kubbi „ Kubbotha		
4 Bandicoot (bilba) „	Kumbo „ Butha	„ Ippai „ Ippatha		
5 Opossum (mute) „	Murri „ Matha	„ Kubbi „ Kubbotha		
6 Blacksnake (nurai) „	Kumbo „ Butha	„ Ippai „ Ippatha		

Now according to the marriage relations in force, Murri can marry any Butha, and as Ippatha is found in the same gentes as Butha, it might be supposed that Murri ought to be able to

* "Ancient Society," p. 56.

+ Paddymelon.

marry Ippatha also. He cannot do so, however, and Mr. Morgan looks upon this restriction as a mark of imperfect development of the gentile organisation. But its real object is seen at once when we know that Ippatha are all classed as the children of Murri, and belong to the same clan as his wife Butha, showing that Ippai is the child grade to Butha as the maternal grade. In the same way Kubbi is the child grade to Matha as the maternal grade, and a similar restriction as to marriage is, therefore, found in relation to Kumbo, who can marry any Matha but not Kubbotha. Exactly the same thing occurs in relation to the Kubbi and Ippai class. The fact that the class division excludes from the right of marriage the persons described as children, while recognising the rules of the gentile organisation, appears to me to be a conclusive proof that the former was primitively connected with such a restriction. This opinion is confirmed by the fact that, through the operation of the Australian marriage regulations, a man cannot marry any member of the grade below him, and is restricted to his cousin or his collateral sister. Mr. Morgan supposes that Murri was originally restricted to Butha, and that he was afterwards permitted to marry his collateral sister Matha. This, however, is contrary to his own theory that marriage between brothers and sisters was the most primitive. Butha is the *cousin* of Murri, and, according to that theory, marriage between them must have been of a subsequent date to that of Murri and Matha. The word *Butha* is in reality equivalent to "cousin," and the use of this term of relationship, which supposes the existence of the four class divisions, shows that marriage between Murri and Butha is of a later origin than that between Murri and Matha, which requires the existence of only two gentes.

That the class names of the Australian system had the origin already mentioned may be shown more clearly by reference to the rules of descent. Before stating these, however, it is advisable to set out the regulations of marriage as given by Mr. Ridley.

These regulations are as follows:—

1. Muri duli marries Matha murriira or any Butha.
2. Murri murriira marries Matha duli or any Butha.
3. Kumbo dinoun marries Butha murai or any Matha.
4. Kumbo nurai marries Butha dinoun or any Matha.
5. Ippai dinoun marries Ippatha nurai or Kubbotha duli or Kubbotha murriira.
6. Ippai nurai marries Ippatha dinoun or Kubbotha mute.
7. Ippai bilba marries Ippatha nurai or Kubbotha murriira.
8. Kubbi mute marries Kubbotha duli or Ippatha dinoun.
9. Kubbi duli marries Kubbotha murriira or Ippatha bilba.
10. Kubbi murriira marries Kubbotha duli or Ippatha nurai.

The five rules of descent connected with the marriage regulations are as follows :—

- (1) The second name of both sons and daughters is always the same as that of the mother.
- (2) The children of Matha are Kubbi and Kubbotha.
- (3) The children of Butha are Ippai and Ippatha.
- (4) The children of Ippatha are Kumbo and Butha.
- (5) The children of Kubbotha are Murri and Matha.

Every child has thus two names from birth, the first of which is that of the class and the second that of the clan or subdivision, the latter being always the name of the mother. Thus—

1. The children of Matha duli are Kubbi and Kubbotha duli.
2. " " Matha murriira are Kubbi and Kubbotha murriira.
3. " " Butha dinoun are Ippai and Ippatha dinoun.
4. " " Butha nurai are Ippai and Ippatha nurai.
5. " " Ippatha dinoun are Kumbo and Butha dinoun.
6. " " Ippatha nurai are Kumbo and Butha nurai.
7. " " Ippatha bilba are Kumbo and Butha (?)
8. " " Kubbotha mute are Murri and Matha (?)
9. " " Kubbotha duli are Murri and Matha duli.
10. " " Kubbotha murriira are Murri and Matha murriira.

These rules have the effect of associating all the four classes among the near blood relations of an individual to whatever class he may belong.* Moreover, the names given to the child are evidently for the purpose of pointing out, not only the clan to which it belongs, but also the position in which it stands in relation to the general members of the tribe.†

* Thus, in relation to Murri, all *Murri* are his brothers, all *Kumbo* his cousins all *Ippai* his sons, and all *Kubbi* his nephews.

† According to the report of Mr Honey published in a recent number of the "Journal of the Anthropological Institute" (Vol. vii. No. 3, p. 249) the names taken by children among the Wailun of Queensland are different from those of both father and mother, i.e., they belong to classes and clans different from those of either of their parents. Among those natives it appears also that a man may marry any woman but one belonging to his own class and clan.

This is remarkable as showing that children do not always belong to the clan of their father or mother. Mr Honey says, moreover, that brothers and sisters take different animal (clan) names. The combination of this rule with the regulation that a man may marry any woman but one belonging to his own class and clan would seem to allow a man to marry his own sister. I think this must be incorrect, as it is quite opposed to the practice of the Kamilaroi tribe, and is inconsistent with the statement that the Wailun rules of marriage and descent are "carried out in the more complete system which has been described in former reports." We cannot come to any certain conclusion as to the result of the operation of the Wailun system until

The class name, however, must have some special significance, and its intention cannot be doubtful when we consider that it has reference to the father and not to the mother. The children of Matha are Kubbi, and they are so because Matha usually marries Kumbo, whose children, as shown by the table already given, are Kubbi. The class name of the child, therefore, is equivalent to a description of the relationship which subsists between a woman's children and their father. This is important as showing that kinship through the male was fully recognised among the Australian aborigines, which, however, is otherwise proved conclusively by the fact, observable on a comparison of the diagrams A and B, that the descendants of the father's sister stand exactly in the same relation to *Ego* as the children of his mother's brother, which is the case also with their descendants.

We are thus driven to the conclusion that the marriage restrictions of the Australians were based on the class organisation, and therefore that this was intended either to prevent marriages between consanguinei, or to point out what persons being consanguinei could intermarry. Mr. Ridley remarks that the rules of descent and marriage "prevent the intermarriage of near relations. They prohibit marriage with a sister, half-sister, aunt, or niece. They also prohibit marriage between first cousins, children of two brothers and of two sisters. But when cousins are the children of a brother and a sister respectively, the law does not prevent their union."* The fact last referred to, although explicable on the simple ground that the children of a brother belong to a different clan from the children of his sister, while those of two brothers or of two sisters belong to the same clan, is very important as showing the origin of the marriage restrictions themselves. Mr. Morgan observes that "the organisation into classes seems to have been directed to the single object of breaking up the intermarriage of brothers and sisters."† There is not, however, the slightest trace of any such custom in the Australian system, which, on the assumption (made by Mr. Morgan himself) that originally the tribes were divided into only two gentes, is perfectly explicable by the *Pūnālūan* custom still found among the Hawaiians, or even by the simpler custom of a man marrying several sisters or a woman several brothers. The latter custom, which Mr. Morgan supposes to be a relic of *Pūnālūu*, but which is more likely to be

we have much fuller details of it than are contained in Mr. Honey's report, but it will probably be found to answer exactly the same end as that of the *Kamilaroi*.

* "Journal of the Anthropological Institute" (1873), p. 266.

† "Ancient Society," p. 55.

its early phase, is yet practised among the American native tribes, and we know, on the authority of the Rev. Lorimer Fison, that the Australian system of relationships agrees in its eight chief characteristics with that established among not only some of the American tribes, but also the Tamil tribes and the Fijians.* If this be so, we shall not be surprised if the class division which is supposed to be peculiar to the Australians, proves to be recognised by all the systems which have reached the same degree of development as theirs. If the class names are, as I believe them to be, merely terms to express certain relationships in which the members of the tribe stand towards each other, the use of equivalent terms of relationship by other peoples is evidence of the existence of a similar division into classes. Moreover, where every individual is related to all the other members of the tribe in the same way as among the Australian natives, the class division must agree exactly with that in use among the last named race. This would imply, however, the existence of marriage regulations the same in effect as those of the Australian aborigines, having for their object the prevention of intermarriage between near blood relations. The members of the Ganowanian family have indeed an extreme repugnance to such marriages, as have also most other primitive peoples, and the agreement of the Tamil, Fijian, and other systems in their chief features with the Australian system would seem to prove that consanguineous marriages are prevented by the operation of all alike.

If the conclusion thus arrived at be correct, we shall expect to find every step in the differentiation of the classificatory relationships attended with changes in the primitive marriage regulations. Mr. Morgan, after stating that the Turanian system "could not have been formed unless *Pānalūan* marriage and the *Pānalūan* family had existed at the time," affirms that "the organisation into gentes was originally sufficiently influential and sufficiently universal to change the Malayan system into the Turanian."† This statement is perfectly true so far as it goes, since the prohibition of marriage between persons belonging to the same *gens*, which is an incident of the gentile organisation, would have that result. Mr. Morgan's explanation is not satisfactory, however, since it requires the differences between the relationships of the Turanian and the Malayan systems to depend on the intermarriage or non-intermarriage of brothers and sisters. He affirms, in fact, that "the change of relationship which resulted from substituting *Pānalūan* in the place of consanguine marriages turns the Malayan

* "Journal of the Anthropological Institute," Vol. ii., p. 263 *seq.*

† "Ancient Society," pp. 435-442.

into the Turanian system.* Now, the evidence of the existence of Mr. Morgan's consanguine family is extremely unsatisfactory. We have already seen that Mr. Morgan seeks to support his assertion as to the former existence of the consanguine family by reference to the *Pānalūan* family of the Hawaiians, and to the fact that marriages between own brothers and sisters are not unknown among them. I have, however, shown that the inference made by the American writer is not a just one, and that the *Pānalūan* custom may have existed quite independently of consanguineous marriages. The theory under consideration must fall to the ground if this view is correct, and it is confirmed by the fact, admitted by Mr. Morgan,† that the family keeps in advance of the system. There is no good reason why this should be so, and it is much more probable that the system and the family agree. Such would, in fact, be the case if the Malayan system were based on the *Pānalūan* family, as may well have been the case, and I shall now proceed to prove that this family would give all the relationships of the Malayan system without the need of consanguineous marriages.

Mr. Morgan shows that the Malayan system represents all the blood relationships of a consanguine family, as follows:—As all the brothers cohabit with all their sisters, each child of the complex union must be equally related to each brother, and so must every child of such children. Moreover, each sister is in some sense mother to all the children, since she is the wife of all her brothers. It is clear that the principle thus involved is applicable to all the members of the grade above that of the brothers and sisters who are thus supposed to cohabit on both the father's and the mother's side; seeing that, according to the assumption, the children of the father are those of all his brothers and sisters, and the children of the mother those of all her brother and sisters. The requirement here made that each sister should be mother to all the children is forced. Although under the conditions supposed all the children of several brothers would be brothers and sisters to each other, each father being equally the husband of all the mothers, yet these mothers can distinguish each her own children, who have clearly but one mother, although having apparently several fathers. Mr. Morgan sees this difficulty, but he endeavours to put it on one side by the unsatisfactory statement that the children of each wife would, as they all have the same husband, be step-children of the others, which relationship being unrecognised, they really fall into the category of sons and daughters. We will now see whether the relationships of the Malayan system

* "Ancient Society," p. 442.

† *Ibid.* p. 442.

may not be more easily derived from a man or several brothers marrying several sisters as exhibited in the *Pānālūan* custom.

In the first place, we may refer to the fact pointed out by Mr. Morgan that, according to the Ganowanian system of consanguinity, although the children of brothers are brothers and sisters to each other, and the children of sisters are brothers and sisters to each other, yet the children of a brother and of a sister stand to each other in a different relation.* This is the same throughout all the forms of the classificatory system except those in use among the Polynesian Islanders. The existence of such a rule is positive proof that relationship is affected by clanship: since as children take the name of their mother, and a man must marry a woman of a different clan from that of his sister, their children must belong to different clans. According to the same rule the children of two sisters must bear the same clan name, and hence they will be more nearly related than the children of brothers and sisters. The nearness of relation between the children of two brothers cannot, however, be thus explained, unless it be assumed, as must have been the case originally when there were only two clans or gentes, that the wives of all the brothers belonged to the same clan. We have an example of such a case in the *Pānālūan* custom, according to which several brothers married several sisters of another clan, having their wives in common. Here all the children of the complex union would take the same clan name as that of their mothers, and would therefore be classed as brothers and sisters, and would stand in the relation of children to all the parents. The same result would follow if several sisters married several brothers of another clan, and possessed their husbands in common. The several wives or husbands, as the case may be, need not, indeed, be related among themselves, except as members of the same clan, if relationship is determined by reference to a common ancestor. According to this principle, if kinship is traced through the male and female lines as among the Polynesian Islanders, not only would all the offspring of such an union as that supposed be children to the several sisters, but the children of a brother and those of a sister must also be brothers and sisters, although belonging to different clans, seeing that they have on one side the same grandparents. The same is true of the children of several sisters, and in either case, therefore, the grandparents occupy the position of common ancestors. It is clear that all the descendants from the common ancestor in the same grade will stand in the same relation to him, if not to each other. All his children are brothers and sisters, and so are all their children. Moreover, the latter are

* "Systems of Consanguinity, &c.," p. 144.

equally children to each of the persons in the grade above them, who are parents equally to all the children. Not so actually, but nominally, as in the earliest form taken by the classificatory system there was but one name for the members of each grade, and hence they must all be equally related as brothers and sisters, children and parents, or not related at all. The latter could not be, however, since they are all descended from a common ancestor, and they must be described as though actually connected by the ties of parent and child, brother and sister. This is consistent with, and would, indeed, almost necessarily follow from, the terms used to express the relationships. Thus the Hawaiian term for father is *makāa kana*, that for mother *makāa wahina*, meaning literally "tall grown male" (or man) and "tall grown female" (or woman). So also *kūikee kana* used for son, and *kūikee wahina* for daughter, mean "the little male" (or man) and "the little female" (or woman). These terms evidently do not denote any special relationship between particular individuals, and they could be used, therefore, without incongruity in reference to all the members of the same grades, although these might embrace persons standing in different relationships to each other according to our mode of expression.

If what had just been stated is correct, Mr. Morgan's explanation of the difference in the relationships recognised in the Turanian system as compared with the Malayan system cannot be the proper one.

So far from the change observable in the former being due to the substitution of *Pānālūan* marriages for consanguine marriages, the Malayan system can be accounted for satisfactorily on the basis of the *Pānālūan* family itself, at least combined with reference to the common ancestor. The existence of this family is, indeed, consistent with restrictions designed to prevent marriage not only between brothers and sisters, but even between more distant blood relations. The recognition by the Polynesian Islanders of kinship through the father, which is admitted by Mr. Morgan, although explained by him in accordance with his special views,* was probably intended to prevent the marriage of persons who were nearly related by blood, and yet who would be able to marry, if the primitive and simple idea of kinship through females alone operated. It is evident that if this was the only idea which regulated sexual unions, a man might marry not only his aunt or his niece, but his half-sister if their mothers belonged to different families. Moreover, if gentile relationship were the only bar to intermarriage, a woman might not only marry her half-brother, but even her

* "Ancient Society," p. 515.

own father, as he would not bear her clan name. The recognition of kinship through the male, would, however, be sufficient to prevent such alliances. When combined with the reference to a common ancestor it would form a bar to the marriage of a man with any other member of his own grade or of those immediately above or below it. Thus, where there were only two clans or gentes, a man's paternal aunt and his niece on the brother's side would have the same clan name as his wife, and therefore, if kinship through the female alone were recognised, he would be able to enter into the marriage relation with them, which he cannot do. This disability can only be accounted for on the assumption that relationship is traced not only through the mother, but also through the father, and it follows naturally from this fact.

Where, however, kinship through both the male and female lines was recognised and was treated as a bar to intermarriage, it would be necessary to supply some limitation to this disability, as otherwise marriage might be put a stop to altogether. Among the Australians that limitation is provided by the division of the people into classes, combined with an elaborate series of marriage regulations, the effect of which is that marriage is permitted between cousins who are the children of a brother and of a sister, but not between any other near blood relations. In China, where kinship through males is fully developed, persons bearing the same family name, showing their descent from a common male ancestor, are not permitted to intermarry. The resemblance pointed out by Mr. Morgan,* and already referred to, between the Hawaiian system of consanguinity and the Chinese system of "grades of relations," justifies us in assuming that the former, like the latter, is associated with marriage restrictions. This assumption is supported by what we know of the regulations as to marriage in force among the Madecasses,† who possess the same primitive system of consanguinity as the Hawaiians. But if the intermarriage of the persons included within the grades of relatives is prohibited, this very fact implies that the restriction does not affect any person beyond those grades. The classificatory system of relationships had, therefore, we can hardly doubt, for its original object, the granting of facilities for marriage in derogation of an earlier system according to which, owing to the importance attached to blood relationship, legitimate sexual alliances had become difficult. Such might well have been the case with the Polynesian Islanders at an early period, when their tribes were small and composed of but few families, recognising kinship

* "Ancient Society," p. 416.

† The Samoans, Malays, and Dyaks forbid consanguineous marriages.

through the father although still influenced by the primitive idea of female kinship, and closely allied by intermarriage. Probably an invading people destroying all the men of the conquered race while reserving the woman for wives, their children would naturally take the father's name, and kinship through the male would almost necessarily be established, notwithstanding the continued recognition for certain purposes of earlier notions.

Where blood relationship through both the father and mother was recognised, the characteristics of the Malayan classificatory system, if its explanation be such as I have stated, could be accounted for even without reference to the custom of *Pūnalūa*, which occupies so important a place in Mr. Morgan's scheme. No doubt the existence of the *Pūnalūan* group—that is, of a family composed of several brothers and their wives, or of several sisters and their husbands—would tend to confirm and perpetuate the Malayan system in the absence of such a counter-acting force as that supplied by the gentile institution. Probably, however, the real significance of that group is quite different from what Mr. Morgan supposes. Instead of the *Pūnalūan* family being the product of a very early form of marriage, it is more likely to have had a comparatively late origin. Judge Andrews says: "The relationship of *Pūnalūa* is rather amphibious. It arose from the fact that two or more brothers with their wives, or two or more sisters with their husbands, were inclined to possess each other in common: but the modern use of the word is that of *dear friend* or *intimate companion*."* The real meaning of the word *Pūnalūa* would seem, however, to be "having two wives;" a signification attached in the New Zealand language, as shown by Dr. William's Dictionary, to the word *Pūnarua*, in which *rua* is the numeral "two." Taylor says the second wife is "*pune rua*," the third wife "*pune toru*," and so on.† The same root as that here denoting wife is found in the Hawaiian *kūpūna*, which signifies "ancestor," and it would seem to imply the idea of a "source" or "spring." We may suppose, therefore, that the term *Pūnalūa* was at first applied to the case of a man having two wives or a woman having two husbands, or to that of two brothers or sisters having their wives or husbands in common. Mr. Morgan, however, states that the word is applied by a man to the husband of his wife's sister, and by a woman to the wife of her husband's brother, meaning "intimate companion," an application of the term which is evidently based on the fraternal relation subsisting between those persons and which has not

* "Ancient Society," p. 427.

† *Op. cit.* p. 331.

necessarily any reference to a sexual alliance. Curiously enough, we find that among the New Zealanders a married woman is called *he hoa*, a "friend," a title which applies also to her husband, who is called *tane*, which, says Mr. Taylor, "though literally only a man, has generally the other signification attached to it."* Now, whether the idea of friendship is associated with the alliance between a single pair, or to that between several husbands and wives in a group, it is far superior to the notion which is at the base of what we must consider more primitive phases of marriage. *Pūnalūa* or "friendship," implies the mutual consent and even attachment of the parties concerned, and hence it is an advance on the custom of wife-purchase, which is founded on the primitive notion of a property-right in children: a notion which, notwithstanding the late date assigned by Mr. Morgan for the origin of *wife-purchase*,† is acted on among all uncultured peoples. The existence, then, of *Pūnalūa* among the Polynesian Islanders, notwithstanding its polyandrous and polygynous features, is evidence of a certain amount of culture, and it is probably much more nearly allied to the marriages of affection of the more civilized races than to the consanguineous alliances of Mr. Morgan's system. As a phase of the wide-spread "brotherhood" custom it may be regarded as evidence of the development of the emotional element in man's nature, and therefore as far superior even to a monogamous union, where this is due to either the purchase or the forcible seizure of the woman who is called "wife," but who is little more than a slave. It is very probable that *Pūnalūa* has given rise to the institution peculiar to the Polynesian Islanders known as the *Areoi*, the origin of which I have elsewhere sought to trace to the brotherhood custom. The members of this society are, according to Gerland, "regarded already as gods upon earth," and are supposed to be elevated above all the laws of morality. These laws were not unknown to them, although not regarded, and so it doubtless was with those who practised *Pūnalūa*. Notwithstanding the peculiar nature of their marital alliances, they forbade marriage between near blood relations and the better to prevent such unions, or to mark how far they were to be forbidden, they classified the persons connected by blood in grades, the terms applied to which were intended, not so much to express the actual relationship between the members of the different grades, as to define the limits of their marriage disabilities. The whole classificatory system, therefore, instead of having originated in a condition of unlimited sexual license, is based on marriage restrictions

* "Ancient Society," p. 331.

† "Systems of Consanguinity, &c.," p. 491.

having for their object the exclusion of near blood relations from sexual union, or rather, was originally intended to facilitate the intermarriage of persons who, although very distantly related, were, owing to their being descended from a common ancestor, within those restrictions.

The people among whom the classificatory system originated, were no doubt at a low stage of culture, but as its "grades of relations" include the members of five generations, they could not have been described as savages. In the phase of the classificatory system, however, found among the inhabitants of Kusaie, or Strong Island, no terms exist for ancestors above father and mother, or descendants below son and daughter, which seems to show that the marriage restrictions recognised by them now only embrace three generations. This is, nevertheless, quite sufficient to prevent the intermarriage of near blood relations, and the Kusaie system is supposed by Mr. Morgan to be identical with that of the Hawaiians.* The explanation I have given of the classificatory system, renders untenable Mr. Morgan's theory of the former general practice of consanguineous marriages among the peoples who originated it, whilst the instances of such a practice cited by him are otherwise explicable. A ground of objection, however, may be found in the fact mentioned by the American writer that, "wherever the relationship of wife is found in the collateral line, that of husband must be recognised in the lineal, and conversely;" according to which rule a man calls, not only his brother's wife, but his wife's sister, his father's brother's son's wife, and his mother's sister's son's wife, "my wife," and conversely.† This curious rule, however, follows logically from that which recognises all the members of the paternal grade as parents of all those in the grade beneath, combined with the regulation according to which a brother's wife is also termed "my wife," a regulation which may have resulted from the *Pānalūa* custom, but which more probably is due, as already suggested, to the influence of the idea of "brotherhood." But Mr. Morgan would probably refer to an Australian custom which seems to support his view of the meaning of the use by the Polynesians of the term "wife." He states, on the authority of Mr. Lance, that if a member of the *Kubli* class met a woman of the *Ippatha* class, he would treat her as his wife, and that "his right to do so would be recognised by her tribe." Mr. Morgan asserts that "every *Ippata* within the immediate circle of his acquaintance would consequently be his wife as well." He further infers that, "under the conjugal system thus brought to light, one quarter of all the males are

* "Systems of Consanguinity, &c.," p. 459.

† "Ancient Society," p. 412.

united in marriage with one quarter of all the females;" a scheme of intermarriage which, he adds, is but a step from promiscuity, although being a subject of organic regulation it is far removed from general promiscuity.* It might be objected to this reasoning that, however true in theory may be Mr. Morgan's explanation of the Australian system, the conjugal right referred to could seldom, if ever, be reduced to practice. Apart from the jealousy of the Australian natives as among themselves, all their females are at an early age appropriated by exchange or purchase by the old natives. The probability is that, in the case mentioned by Mr. Lance, the woman of the Ippata class could be treated by the Kubbi man as his wife only if she did not already belong to some other man in that capacity, which would reduce the case to the ordinary one of every Kubbi being allowed to form a temporary or permanent sexual alliance with any Ippata, assuming that she was not already married. When, moreover, we consider that Ippata is "cousin" to Kubbi, the Australian system is seen not to be so barbarous as Mr. Morgan imagines. We may, therefore, believe that the Polynesian use of the term "wife," in the cases referred to by Mr. Morgan, has a different explanation from that given by him, and in relation to collaterals, it is probably applied rather in the sense of "friend" than with any sexual intention.

It remains now for me only to notice the explanation of the origin of the classificatory system of relationships given by two English writers.

In the first place, Sir John Lubbock ascribes so much importance to the action of the tribal organisation over the primitive institutions of mankind as to make it the very basis of the classificatory system. He says that: "Children were not in the earliest times regarded as related equally to their father and their mother, but that the natural progress of ideas is, first that a child is related to his tribe generally; secondly, to his mother and not to his father; thirdly, to his father and not to his mother; lastly, and lastly only, that he is related to both."† It is uncertain in what sense the term "tribe" is here used. If it is intended to express the same idea as "clan," or large family group, facts already pointed out by Mr. Morgan prove the insufficiency of Sir John Lubbock's explanation. Mr. Morgan shows that, "when the tribal relationships are run parallel with those established by the system, that the former traverse the latter quite as frequently as they affirm the connection." He adds that "in some Indian nations descent is in the male line,

* "Ancient Society," p. 54.

† "Origin of Civilization," 3rd Ed., p. 113; "Journal of the Anthropological Institute," Vol. i., p. 25.

in which cases the tribal relationships, as above given, would be reversed; in others it does not now exist, and yet the same system of relationships prevails amongst them all alike, irrespective of the existence or non-existence of the tribal organisation, and whether descent is in the male or female line.* The facts thus stated by Mr. Morgan show conclusively that the classificatory system cannot have been based simply on the clan organisation and the relationship to the clan. If by "tribe" Sir John Lubbock means a group of persons forming together but one family, the case is no less difficult. We have examples of such a large family group in some of the Chinese villages, all the inhabitants of which bear the same family name. But this is not a case in point, as marriage among the inhabitants of such a village is not permitted, whereas Sir John Lubbock's hypothesis would require the greatest freedom of intermarriage. It would require more than this, as the only relationship recognised in the primitive family group supposed, would be that of the tribe itself; a relationship founded on the practice of promiscuous intercourse between the sexes. On this subject I will say merely that the evidence in favour of the former existence of such a practice is, apart from the classificatory system of relationship itself, of the very weakest description. In his later work, Mr. Morgan, after referring to Mr. Darwin's opinion on the subject, says: "It is not probable that promiscuity in the primitive period was long continued even in the horde, because the latter would break up into smaller groups for subsistence, and fall into consanguine families. The most that can safely be claimed upon this difficult question is, that the consanguine family was the first organised form of society, and that it was necessarily an improvement upon the previous unorganised state, whatever that state may have been."† This is practically an admission that there is no evidence of any period when the sexual condition of mankind was one of promiscuous intercourse. Mr. Morgan certainly insists that the existence of the consanguine family requires such a condition as its forerunner. This position might be contested, but if the explanation I have given of the origin of the classificatory system of relationships is correct, it is valueless, seeing that there is no evidence of the consanguine family having ever existed as a general condition of social organisation.

In conclusion I have only to notice the explanation of the classificatory system given by Mr. McLennan, who describes it as a "system of mutual salutations merely," although from its being connected with the family, its phenomena, and therefore

* *Op. cit.* p. 476.

† "Ancient Society," p. 418.

also its origin, must be "ultimately referable to the marriage law."* The marriage law to which Mr. McLennan refers the origin of the system, is that of the ruder form of polyandry found among the Nairs. As stated by Mr. McLennan, its explanation is as follows: "A necessity or convenience for classifying kindred united in families, while as yet husbands and wives did not live together within the same family."† This explanation, although ingenious, is not in accordance with fact, as it supposes not only that the wives continue to live under the maternal or fraternal roof, but that kinship is traced through the mother alone, whilst in reality the peoples using the Malayan system trace kinship through the father as well as the mother. This fact is fatal to Mr. McLennan's hypothesis, which requires kinship to have originally been traced through females only.‡ In opposition to this view, Mr. Morgan remarks, "The Turanian, Ganowanian and Malayan systems of consanguinity show plainly and conclusively that kinship through males was recognised as constantly as kinship through females."§ In the present paper I have shown that this is true in relation to the actual conduct of the Polynesian peoples, and it must be so wherever the wife leaves her father's house to reside in that of her husband. It might be different where the husband goes to reside among his wife's family, although not necessarily so. According to Mr. Taylor,|| such a practice is common among the New Zealanders, and it doubtless originated in the desire to increase the strength of the tribe to which the wife belongs, by retaining her children within it instead of transferring them to another tribe, as would result from the New Zealand practice of tracing kinship through the male if the woman goes to reside among her husband's family. The idea on which that practice is based—the ownership of children—is quite distinct from the kinship through females only, which Mr. McLennan's hypothesis requires, and which he assumes to be connected with the Nair form of polyandry. It is difficult indeed to imagine how the Nair form of polyandry, considered as a primitive institution, can have originated. The descent of the family may be traced back to a common mother, but her children must have had a father, and, unless we suppose mankind to have subsisted from the very first in groups answering to the Nair family, there must have been a time when the family had a male as well as a female head. In this primeval family we cannot doubt, judging from

* "Studies in Ancient History," pp. 366 372.

† *Ibid.* p. 391.

‡ *Ibid.* p. 379.

§ "Ancient Society," p. 515.

|| "Te Ika A Maui," p. 337.

analogy, that the man was the real head, and most probably he treated his female children, when they were allowed to live, as articles of property, and either gave or sold them to other men as slave-wives, or retained them for the purpose of increasing the number of his family by their children. Possibly he may have permitted them to accept the embraces of any man who was able and willing to make him a return in labour or otherwise, and in this case paternity would often be uncertain. Kinship through the female only might arise in that way, and in that way alone, but the case thus supposed is totally different from that supplied by the Nair form of polyandry. In whatever way it originated, however, the clan or gentile institution will not give all the relationships of the classificatory system, and therefore kinship through the female, on which the primitive clan is based, cannot do so. If it would give those relationships, the earliest form of the classificatory system must be that associated with the gentile institution as found developed among the Turanian and Ganowanian tribes. Such a conclusion would, however, require that the phase which is preserved by the Polynesian Islanders, and which both Mr. Morgan and Mr. McLennan assume to be the most primitive, must in reality be a later form, due to the growth of the idea of kinship through the father. Something might be said in support of this view, but it need not now be discussed. For my part, whichever phase of the classificatory system may ultimately be found to be the most primitive, I have no doubt that, although kinship may for certain purposes have been originally traced through the mother, the regulations as to marriage were based on the relationship of a father to his child, and that the ideas which gave rise to those regulations also originated the classificatory system of relationships.

DISCUSSION.

Mr. HYDE CLARKE called Mr. Wake's attention to the distinct names for Elder Brother and Younger Brother and Elder Sister and Younger Sister, so generally to be found in the pre-historic languages. The distinction might perhaps properly apply to the sons or daughters of the same father by different wives, a son and daughter of the head wife being called Elder Brother and Elder Sister. He observed that among the Albanians or Arnauts the term of Brother was widely applied, and that the association was worth investigating.

Mr. R. B. SWINTON remarked, that among the people on the South-West Coast of India (in Malabar and Cavara), there was a custom of descent of property in the female line; not a man's son, but his sister and sister's son were his heirs. This was law known in Cavara by the term *aliza-santanam* (descent through the son-in-law), and was supposed to have had its origin from a former practice of promiscuous intercourse which rendered male parentage ambiguous.

Mr. A. L. LEWIS read a paper on "The Devil's Arrows," Yorkshire.

The "DEVIL'S ARROWS," YORKSHIRE.

By A. L. LEWIS, Esq., M.A.I.

NEAR Boroughbridge, about 15 miles north-west of York, are situated certain stones, known as the "Devil's Arrows," at the present time three in number. They stand in a line nearly north and south by compass, the most northerly being about 18 feet high, $7\frac{1}{2}$ feet broad, and $3\frac{1}{2}$ feet thick; $197\frac{1}{2}$ feet from this is a second, about 22 feet high, by $4\frac{1}{2}$ broad and thick; and 362 feet farther, standing nearly on the brow of a slight hill, is the third, about 23 feet high, by $4\frac{1}{2}$ broad, and 4 thick.

Camden, Leland, and Stukeley speak of a fourth stone, which, by putting their descriptions together, may be supposed to have stood between the first and second, and close to the latter. Leland says they stood within 6 or 8 feet of each other. Stukeley says two of the stones are exactly 100 cubits apart, and 100 cubits, at his standard measurement of $20\frac{3}{4}$ inches to the cubit, equal 172 feet 11 inches only, against about 187 according to my measurement ($197\frac{1}{2}$ feet, less $4\frac{1}{2}$ for the thickness of the lost stone, and 6 feet for its distance from the second existing one). He says further, that two more stones, doubtless my second and third, are 200 cubits asunder, that is 345 feet 10 inches, instead of 362 as measured by me. Again, he says in an unpublished letter, that another stone, now (1740) carried off, was 100 cubits more, in the whole making 400 cubits distance.

This stone would obviously be in prolongation of the present line southwards. It will be seen that there is a considerable difference between Stukeley's measurements and mine ; but I am not the only one who has had occasion to differ from him as to facts and details concerning these monuments, and after comparing a number of his measurements, given both in feet and cubits, I have come to the conclusion that the feet represent his view as to the actual measurement, and the cubits his view as to what the distance was intended to be or ought to have been. That his cubits were only approximate in the present instance may be judged from the fact that even if we suppose his 100 cubits, 200 cubits, and 100 cubits, making in all 400 cubits, to be taken from the centre of the stones, so as to omit their thickness, the distance between the lost stone and the second existing one, and half the thickness of both these, say 10 or 12 feet in all, must either be added to his 400 cubits, or subtracted from the 100, the 200, or the second 100 cubits.

The arrangement of the stones past and present will be understood from the following diagram :—

Stones now remaining.

* * *

Stones as they are known to have existed.

$$* \quad * \quad [l] \quad * \quad * \quad *$$

The next points for consideration are naturally the probable date and object of this monument.

The Rev. W. C. Lukis, whose opinions on rude stone monuments must always command the most respectful attention, and to whom I am indebted for valuable information respecting these very stones, read a paper before the Society of Antiquaries, a short time ago, in which he suggested that the stones were the remains of a series of lines, like those of Carnac, a view which I do not at present see sufficient reason for adopting. A series of avenues of stones at an ordinary distance from each other, and extending more than 700 feet in length, and a proportionate breadth, would require some hundreds of stones, none of which would have been very small if we may judge from those left, and I cannot believe, without further evidence than is afforded by the known destruction of two stones in two centuries, that

all these would have been removed, leaving no trace behind except the three survivors. Mr. Lukis informs me, however, that he is going to survey the country round thoroughly, to see if he can find any indications of other stones, and it is but right to wait the result of his search before giving a final opinion on this question.

While contending stoutly for the pre-Roman and probably Celtic origin of the stone circles and dolmens of our country, I should be disposed to listen favourably to any evidence that might be brought forward for a Scandinavian authorship for the "Devil's Arrows." There seems to be some reason to believe that the Scandinavians did erect stones in commemoration of battles, and there is no part of Britain in which we might more expect to find such a Scandinavian monument than in Yorkshire. The monument, as it is known to have stood, is very nearly symmetrical, and of a very different character from those which I have always held to be British; the addition of a single stone at the point marked [a] in the diagram, would make it perfectly symmetrical, by matching the two stones which are known to have stood close together, but those two might have been placed so to mark some special point in the battle (if battle there were), and I do not therefore insist upon the existence of even one other stone. I am not aware that any sepulchral deposits have been found here. If so they would perhaps settle the date. If not, it might be inferred that no battle had taken place here.

The stones themselves are of a soft grit, full of tiny pebbles, and the rain has worn long and deep channels on all sides of them, narrowing from the top downwards. These channels have been mistaken by at least one antiquary for artificial "flutings," but that they are waterworn channels is evident from their running straight down two slanting sides of a stone which leans, and from their being very long on the uppermost (third) side, and very short on the overhanging (fourth) side of the same stone.

These stones being of great size, questions naturally recur as to the means by which they were carried to and erected on their present site, and I may therefore be excused for repeating an account which I have received, but have never seen in print in this country, of the manner in which these things are done by some of the hill tribes of India.*

A stone having been selected from some place where there

* This account was given by Mr. Greey, C.E. (since deceased) to the late Dr. Inman, who sent it to me for publication. I sent it to the "*Materiaux pour l'Histoire Naturelle et Primitive de l'Homme*" (April, 1876), but have seen no notice of anything of the sort in English.

are natural cracks, into which levers and wedges may be introduced, is split from the parent rock by those instruments, and moved on rollers till its weight is transferred to two or three straight tree trunks cut for the purpose, under which strong bamboos are placed crosswise, which again rest on a number of smaller bamboos, and these again upon others, if the stone be very large, the smallest being far enough apart to allow a man to stand between them. All these being lashed together at each crossing, form a simple but substantial framework, which may be made of such size as to allow a sufficient number of men to grasp, lift, and transport it and its burden, so that a stone weighing twenty tons has been known to be carried up a hill 4,000 feet high in a very few hours. It has been calculated that three or four hundred men could in this manner transport either of the "Devil's Arrows" any distance that might be wished.

On reaching the spot where the stone is to be erected, a hole is dug of sufficient depth to keep it steady, into which one end of the stone is allowed to slide, ropes are then attached to the framework, on which the other end still rests, and by hauling at them the stone is quickly set up.

These operations, based as they are upon a sound natural principle, are yet so simple and so well suited for a state of society in which unskilled labour is very plentiful, that we may readily believe them to have been carried on in our own country. There might be some difficulty in getting a stone perfectly perpendicular in this way, and that may be one reason why so many are found leaning, and why so many others, which were doubtless more or less upright in the first instance, have fallen altogether.

MAY 14TH, 1878.

MR. JOHN EVANS, D.C.L., F.R.S., *President, in the Chair.*

The minutes of the previous meeting were read and confirmed.

The following presents were announced, and thanks were ordered to be returned to the respective donors for the same.

FOR THE LIBRARY.

- From the SOCIETY.—Jahrbuch der K.K. Geologischen Reichsanstalt. Vol. XXVII, Nos. 3–4; Verhandlungen, do. Nos. 11–18.
- From the ANTHROPOLOGICAL SOCIETY of VIENNA.—Mittheilungen der Anthropologischen Gesellschaft. Vol. VII, Nos. 7–12.
- From the EDITOR.—Revue Internationale des Sciences. Nos. 18–19.
- From the ASSOCIATION.—Journal of the Royal Historical and Archæological Association of Ireland. Vol. IV, Nos. 31–32.
- From the AUTHOR.—Mémoire sur la Nomenclature Cérébrale. By Dr. Paul Broca.
- From the SOCIETY.—Giornale di Scienze Naturali ed economiche. Vol. XII. Palermo, 1877.
- From the SOCIETY.—Proceedings and Reports of the Royal Society of Tasmania for 1876.
- From the EDITOR.—Materiaux pour l'Histoire de l'Homme. March 1878.
- From the AUTHOR.—Über das Skopzenthum in Russland nebst Historischen notizen. By Dr. E. Pelikan.
- From the INSTITUTION.—Journal of the Royal United Service Institution. Vol. XXII, No. xciv.
- From the ACADEMY.—Bulletin de l'Académie Impériale des Sciences de St. Petersburg. Tome XXIV, No. 4.
- From the EDITOR.—Revue Scientifique Nos. 44–45, 1878.
- From the EDITOR.—“Nature” (to date).

A paper was read by Prof. ROLLESTON, M.D., F.R.S., entitled “Description of a Male Skeleton found at Cissbury.” This will appear in a future number.

Capt. HAROLD DILLON, F.S.A., exhibited a series of Flint implements, collected in the neighbourhood of Ditchley, Oxfordshire; and a number of others from the Drift Gravel of the Lea Valley, near Clapton, were exhibited by Mr. WORTHINGTON G. SMITH, F.L.S.

Professor ROLLESTON also presented the following report on Excavations at Sigwell in Somerset, prepared for the meeting of the British Association at Plymouth, in August, 1877:—

FIG 1. SECTION ON LINE C.BAD OF PLAN

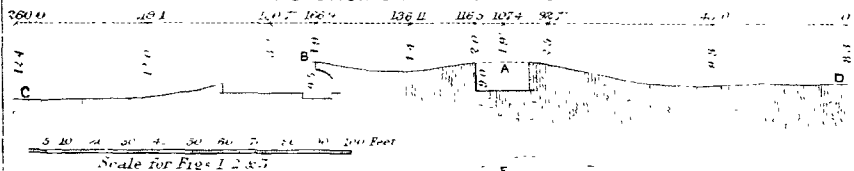


FIG 2
PLAN OF
N-BARROW

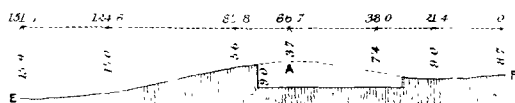


FIG 3 SECTION ON LINE E-A F OF PLAN

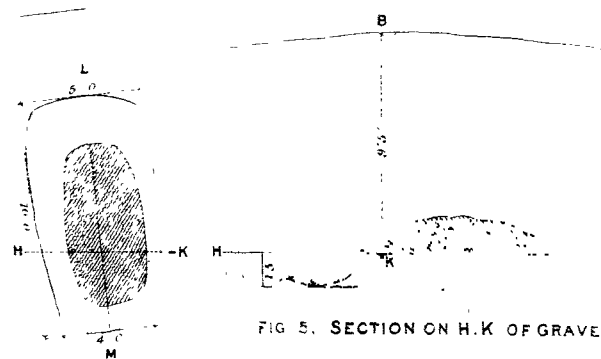


FIG 5. SECTION ON H.K. OF GRAVE

FIG 4.
PLAN OF GRAVE

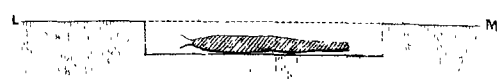
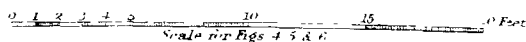
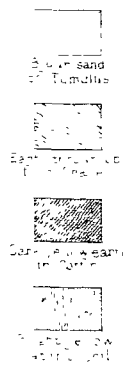


FIG 6. SECTION ON L.M. OF GRAVE



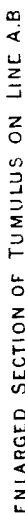
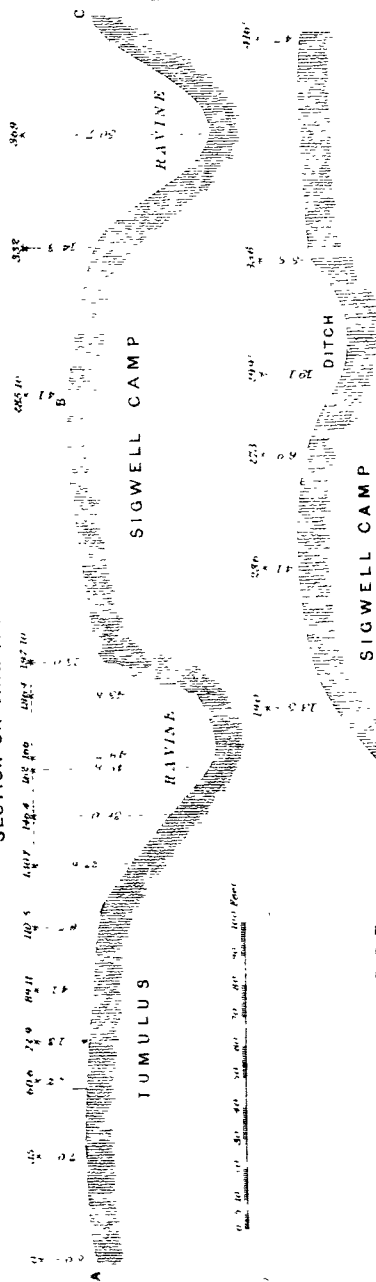
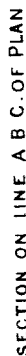
EXPLANATION



SIGWELL (SIX WELLS) CAMP PARISH OF COMPTON PAUNCEFOLD NEAR CADBURY, SOMERSET

T. *Plan of the Camp, showing the interior of the Camp.*
H. *Part of the camp of original ditch left when another was cut at the back of it and the rampart thrown back to meet being taken in reverse from R*





H *Sarg* = **K** *Biant* body with one oval beneath

M *Line of old flat surface, which ran 8 feet beneath entire pocket*

REPORT of EXCAVATION of a TWIN-BARROW, and a SINGLE ROUND BARROW at SIGWELL (SIX WELLS), PARISH of COMPTON, SOMERSET. By PROFESSOR ROLLESTON, M.D., F.R.S., and MAJOR-GENERAL A. LANE FOX, F.R.S. With an APPENDIX on the TOPOGRAPHY of SIGWELL. By MAJOR-GENERAL A. LANE FOX.

THE following account of the examination of three round barrows at Sigwell, in the parish of Compton, Somersetshire, two of which were in juxtaposition and may be spoken of as a twin-barrow, whilst the other stood apart from any other barrow, but overlooked what we hold to have been a camp of an earlier period than these barrows, throws light upon the following questions.

Firstly, it shows that in the Bronze Age, and amongst men who were practising cremation, considerable variety existed as to the mode of their disposing of the dead. In the two burials discovered no urn had been employed, and the bones had been picked out of the pyre and placed apart, one set in a bark coffin, the other simply in a separate place in the soil of the barrow. Yet in one of the barrows pottery was found of a kind which showed with some probability that urn burial was not unknown to the original constructors of the barrow.

Secondly, the measurements of the entire mass of each barrow, as compared with those of the very small spaces in which the burned bones were contained, in one case within a circle of six inches radius, will show how exceedingly easy it must be to overlook the existence of such a burial, and how cautious we should be in asserting that nothing can be found in such mounds to serve as their *raison d'être*.

Thirdly, the relative position and elevation and other peculiarities of one of these barrows, that to be hereinafter spoken of as "Sigwell iii," and of a small British camp which we believe the area labelled B on the plans to have been, show, as we believe very unmistakably, that the camp was earlier in point of date than the barrow, and the work of stone-using, not of bronze-using, men.

This exploration was undertaken at the suggestion of the Rev. J. A. Bennett, the rector of the neighbouring parish of South Cadbury: and to his other suggestions on many points, and to his help throughout, we are greatly indebted.

The British Association gave us a grant towards the defrayment of the expenses, and the following report was read before the Plymouth Meeting in August, 1877.

"Sigwell i." July 18, 1877. Tuesday.—The examination of the twin-barrow was begun by opening the tumulus situated to the north ("Sigwell i." Pl. 1, fig. 2, A) by a trench 9ft. 1in. wide from the east side.

The natural soil, lias sand, was of a light yellow colour with concretions of a small size and somewhat darker hue intermingled with it, and was readily enough distinguishable from the made earth of the barrow, which was darker in colour owing to finally divided carbonaceous matter, and was also more loosely compacted. The natural soil was 5ft. below the top of the barrow at its eastern edge, and 9ft. below it at its centre. When the excavation had passed the centre westward, it was opened out northwards to a length of 21ft..

July 19, Wednesday.—A great deal of charcoal was found about 4ft. above the natural surface at the centre; and at a depth of 1ft. 6in. from the natural bottom, and 7ft. 6in. from the surface under the centre picket, a well formed flint "scraper" or "strike-a-light" was found. And in all about 20 fragments of worked flint were found in this barrow, some of them with *patina* upon them, and some with rose-coloured staining (from manganese?), but most retaining the black surfaces of their original fractures unchanged, and showing thereby that they were chipped during, or only shortly before, the erection of the mound, for the purpose of funeral ceremonial. But in this northern part of the twin-barrow we found no pottery, no bronze, no interment; and the flints, such as they were, were much fewer in mere numbers than in either of the other two barrows to be hereafter described. Our failure to find any interment may be explained by the fact that this mound was very extensively burrowed into by badgers, foxes, and rabbits; and if the interment had been contained within as small a compass, and had consisted of such easily scatterable materials as those contained and discovered in the two other mounds, it is easy to see how it might have been entirely dispersed and destroyed.

"Sigwell ii," July 20, Thursday.—We commenced upon the southernmost of the two halves of the twin-barrow (Pl. 1, fig. 2, B), driving a trench 15ft. wide from east to west, beginning along a line 30ft. south of the line of the centre picket, but some little way, as the plan will show, from the actual southern boundary of the barrow. Some excavation had been made, either for the sake of investigation or for digging out rabbits, fox, or badger, on the south-east side of the barrow; the earth disturbed by this operation had been partly thrown out eastwards, partly filled in again; through the westward part of the disturbed soil we dug, and found that the diggers had not gone very far down and had left a "steel" for striking a light and a piece of glazed pottery in their "filling-in." We came upon the natural surface at a depth of 9ft. 10in., as in the northern barrow, the ground and the mound being of the same distinctive character as regards each other.

A piece of British pottery (labelled "Sigwell ii a.") was found 15ft. 6in. to the south-west of the centre picket, and 9ft. 10in. below the surface. It had been apparently the bottom of a jar or urn, and may possibly indicate that an urn burial had taken place in this barrow before the one we had to deal with. The distal half of the metacarpal or metatarsal of a sheep or goat was found about 5ft. down in the barrow near to the centre picket. It was a good

deal decayed, but one of the phalanges was found in relation with it.

3ft. 8in. to the west of the centre picket (Pl. 1, figs. 1, 2, 4, 5, and 6) we found a grave 1ft. 6in. deep in the natural soil, 10ft. long, 5ft. wide at the north, 4ft. wide at the south end, its long axis due magnetic north and south, that of the tumulus itself being about north 5° east. The eastern end of the grave was 7ft. to west of the centre picket, 3ft. 10in. of the length of the grave being to the south of the centre, and the remaining 6ft. 2in. to the north. In this grave was contained a bark coffin, inside of which was a bronze dagger, and a quantity of very thoroughly burnt small fragments of human bones. The longest diameter of the largest of these fragments being only .9in., it is difficult to say more than that this fragment, being apparently a part of that portion of the occipital bone which is known as the *Torcular Herophili* (the very same portion of bone as that which was found in the deposit of La Tinière, and one which possesses a singular power of resisting various destructive agencies), probably belonged to a young male subject. With this and one or two more fragments of skull there were some fragments of the long bones. With the white fragments were mixed up here (as also in "Sigwell iii" to be hereafter described) masses of bones so burnt and so broken up as to present an Oxford grey colour from the intimate intermingling of their white with their carbonised factors. With the bones were mixed up inside the oak bark coffin some flint flakes labelled "Sigwell ii c;" but not a single fragment of charcoal. It had been made of two pieces of bark, which had been fastened together at the sides, so as to leave two free ends projecting freely, not wrapped round each other. But in one section drawn by General Lane Fox (Pl. 1, fig. 5), the upper bark cover having been shorter than the lower, this latter simply curves round its free edge. As the ensuing description will show, the lower piece of bark must have been laid upon the ground, and the bones from the pyre or ustrinum must have been brought to it and placed upon and along it together with the earth and the bronze dagger, and the flints which were found inside the coffin by us. The upper piece of bark was then put over the entire mass of contents, and the rest of the barrow piled over them.

The coffin's east edge was nearer the east border of the grave than its west edge was; at this edge it was about 1ft. 2in. short of the grave's boundary. Its length was, from south to north, about 7ft.; in working from south to north we had cut away the south end of the coffin before we were aware of it, so that we cannot say with perfect certainty where its south end began, but as its north end was detectable 2ft. from the north end of the grave, the entire length of which was only 10ft., this is of no great consequence. The width of the coffin was from 34in. to 36in.; its depth in the middle line about 6.5in. (Pl. 1, fig. 4).

The contents of the bark coffin contrasted very strikingly with the made earth of the barrow above, with the natural soil into which the grave was sunk on either side, and thirdly with the soil

from the grave itself, which had been thrown up on the east side of the grave as seen and shown in the section. The soil within the coffin was lighter a good deal than the made earth of the barrow, the intermingling of which with fairly divided carbonaceous matter had made it in places very dark; but was much less light than the natural ground into which the grave was sunk. But it is of great importance to note that in the soil inside the bark coffin no fragments of charcoal sufficiently large to be detected with the naked eye were visible; as hence we see that the body was burnt some distance away from the grave, and that the burnt bones were picked up out of the ashes and carried to the grave separately,* being distributed as deposited throughout the entire length of the coffin examined. The upper bark was much thinner than the lower, the lower being as much as seven-eighths thick, whilst the upper was as little as one-fifth to one-fourth. The upper piece had split in some places and the sand had worked away into the space left empty. *In situ*, the layers of the bark towards the interior were black, and the outer reddish; but, on drying, the reddish colour is in many pieces the colour throughout the entire thickness of the bark. Microscopic examination showed no dotted cells, and the Scotch fir is thereby excluded, but it is possible that it may have come from the Wych elm. Its structure, however, had been made exceedingly difficult to examine by the ravages of a fungus.

In this coffin, together with the bones and the two or three flint chips, was a bronze dagger with three rivets, 6·5 in. long from proximal rivet to point. It was much decayed, and did not rest on the bottom of the coffin, but was separated from it by a considerable thickness of dullish yellow sand. Its point was broken away for a length of 7·10 in. and this part was brought away on a piece of the hardened sandy earth. This lump of earth is preserved with a little of the crumbled-away part of the point adherent to it; the greater part of the point, however, has been attached, together with the rest of the blade, to a piece of cardboard. The lamina which held the rivets has broken up, and the small fragments of bronze diffused throughout the soil in the bottle labelled "Sigwell ii b," represent it.

The dagger lay near the southern end of the grave, about 2 ft. from the end; its pivot end was at the south, its point at the north. An interment which must have been of a somewhat similar character is described by Mr. Spence Bate, F.R.S., in the *Transactions of the Devon Association*, Vol. v. 1872, p. 555-556. There "a mass of comminuted bones mixed with earth, instead of being enclosed in an urn, were found lying closely placed together in one spot beneath the stones." And in the earth that was carted home, "besides a quantity of bits of bone, was found the blade of a bronze dagger."

"Sigwell iii" (Pl. 2, T, and Pl. 3), Monday, July 23.—Commenced

* For the picking up of burnt bones see Max Müller, *Die Todtenbestattung*, *Zeitschrift Deutsche Morgenland. Gesell.* vol. ix., p. 17. Colebrooke, "Life and Asiatic Researches," Vol. ii. *ibique citata*.

work with seven men upon the barrow to the south-west of Sigwell camp, lettered T upon plan, by cutting a trench 17ft. long and 12ft. 6in. wide on line A B of plan, and to south-west of centre picket. This barrow resembled the two already described as "Sigwell i" and "ii" in the material and mode of its construction; in containing burnt bones which had been picked out of the ashes of the fire in which the body they belonged to had been burnt and buried apart; and in containing fragments of coarse pottery, it resembled "Sigwell ii," but differed from it in not furnishing any specimen of bronze, and in, perhaps by way of compensation, furnishing a very large number of worked flints, some black, others whitened on their fractured surfaces, and in containing a small fragment of a patterned drinking cup or food-vessel, and in containing a very much larger quantity of human burned bones as well as two large fragments of unburnt bones, an *os innominatum*, to wit, and a piece of a femur.

Among other important lessons taught by the history of this barrow, one of special importance is the ease with which it is possible to miss an interment when that interment lies within a circle of half a foot radius, and consists only of a small quantity of either very finely comminuted or all but pulverised burnt bones.

A good scraper, labelled "Sigwell iii c," was found 3ft. 5in. south-west of the centre picket and 4ft. 7in. below the level of it. All through this barrow worked flints were found in much greater abundance than in either of the other two. I was inclined to connect their presence in this quantity with the absence in this barrow of any rabbit-holes, supposing that a rabbit in burrowing would be likely to throw out a worked flint rather than an equivalent mass of sand for obvious reasons, mechanical and other. But I should not press this view.

Exactly beneath the centre picket, and 6ft. below it, was a mass of burnt bones occupying a circle of about a foot in diameter. The bones belonged to an adult, sex uncertain. In two other spots in the barrow two other bones were found, viz., a fragment of a right *os innominatum*, the acetabular portion of which is so shallow as to suggest that it has been affected by disease and absorption, and a fragment of a femur also of the right side. The burnt bones, "iii d," were in much greater quantity than those found in "Sigwell ii," and had some, though very little, charcoal amongst them: differences which may be accounted for by the place in which they were burnt having been in close proximity to the place where we found them. The place of burning we discovered thus. At a distance of 1ft. 9in. below the burnt bones there was a thick seam of burnt wood 4in. thick, and the floor below the ashes, at a spot a little to the north-east of the centre, was very much reddened, showing that a fire had been lighted and had burnt with much intensity upon it. In these ashes on the floor of the barrow were a few fragments of human bone, "iii e," well burnt, like those above, which we may suppose, therefore, to have escaped the careful out-picking which had removed so large a number of the burnt bones from interminglement with the ashes, and had placed them together, as

described, on the top of a mass of earth, piled up to a height of nearly 2ft. above the site of the pyre. A similar up-piling of earth must have taken place in the bark coffin in "Sigwell ii," as the description shows, and a similar picking out of the bones from among the ashes. That the fire had been lighted on the original surface without paring away the turf was plain enough, from the fact that in paring it immediately below the ashes, at 7ft. 9in. to 8ft. below the centre picket—the stalks of coarse grass and bracken were very plainly visible in section (Pl. 3, enlarged section). But besides this we found also round sections of small stakes about 1in. in diameter, which penetrated 6in. or 7in. down into the natural soil, and some of which tapered towards their lower ends. They had been stuck in to support the pile of wood we may suppose. A chipped flint disc, 2½in., chipped on both sides, was found in the centre of the burnt wood, "Sigwell iii c," which might have been used as a sling-stone with a riband sling. Of the other flints some have black fracture surfaces, others had been weathered before being put into the barrow; two good scrapers were amongst them, one "Sigwell, iii. c," having been found by us 3ft. 5in. south-west of the centre, and 4ft. 7in. below the surface; the other "Sigwell iii f," having been found by the Rev. J. A. Bennett in superintending the filling-in of the excavation. One flint has a saw-edge, as I think purposely produced; another has the appearance (but not, as I think, the reality) of a barbed arrow-head. Some of the flints had been burnt.

The two bones found at a distance from the burnt ones may nevertheless have belonged to the same body as that which furnished the ashes; both are of the right side, the one an *os innominatum*, the other a femur fragment. They may have escaped the perfect burning to which the rest of the skeleton was subjected. Why they were not put together with the perfectly burnt bones I do not know. The charcoal and ashes of the pyre must have undergone a very complete sifting to leave so few bones behind amongst them, and also a very complete shifting of place as regards a considerable part of them, for the layer of charcoal over the natural soil, which had been reddened, was not thicker than that which was over the parts which were not so reddened. The charcoal over these latter parts, therefore, must have been removed on to them. That the burnt bones were collected in a skin, or possibly in some textile fabric, and so placed where we found them, may, in the absence of any relics of bark, or of either of the other substances just mentioned, be shown to be probable by a reference to a paper by the Babu Rajendralala Mitra, in the "Journal of the Asiatic Society of Bengal," 1870, iv., p. 253, where we read that the bones from the pyre "are washed and put in an urn or tied up in a piece of black antelope skin."

That the two large fragments of bone found in this interment may very well have belonged to the same body as that which furnished the ashes, is evident from the following observations of Dr. Hutchinson, of Patna, which are put on record by Dr. Norman Chevers, in his "Medical Jurisprudence," p. 64, 1870:—

“Dr. Hutchinson, of Patna, an active observer of all that can throw light upon our knowledge of medical jurisprudence in India, took an opportunity to ascertain exactly the amount of wood which would be necessary to destroy entirely an adult healthy body, and the time that would be necessary for its entire cremation. The pyre was composed of ten maunds of wood, but an equal amount of fala straw was necessary, as also two bottles of oil. The pile was lighted at 6.30 P.M., and at 3 A.M. next morning the consumption of the body was declared to be complete. When he visited the spot he found in the centre of the ashes the heads of two femora entire, but completely calcined, and a mass of incinerated matter, as large as two fists, said to be the remains of the liver. This 20 maunds, or 1,600 lbs. of wood and straw and two bottles of oil, were required to consume a healthy body, and $8\frac{1}{2}$ hours more required for the operation, which even then was virtually incomplete. Here, however, five times the needful quantity of fuel was consumed.”

OBSERVATIONS *on the* TOPOGRAPHY of SIGWELL.

By MAJOR-GENERAL A. LANE FOX.

As it was my particular function during these excavations to make the survey and take the measurements, a few words on the topography of the neighbourhood of Sigwell may be desirable.

Leaving Professor Rolleston, whose admirable description we have just heard, to superintend the digging, I set about examining the surroundings. At the distance of a mile in a south-west direction we have Cadbury, a large British camp, which like most earthworks that are distinctly British, occupies with its entrenchments the whole brow of the hill on which it is situated; it is one of those positions which the Rev. F. Warre, in his excellent classification of the British camps of this district,* describes as fortresses pure and simple, having no interior divisions, as distinguished from other works which, having a kind of keep and sometimes one or two fortified interior partitions, he considers to be fortified towns rather than positions of a purely military character. It is on a detached spur from the line of hills which are shown on the right of the accompanying rough sketch, and which run north and south, forming the eastern boundary of the Yeo Valley, and the source of many of its tributary streams. To the west of Cadbury the ground is low for some distance. On the east, the summit of the hills is occupied by table land, the margin of which is defined in the accompanying sketch by Littleton Hill, Pen Hill, Charnwell, Sigwell, and Gurt, and between this range and Cadbury is the long eastward-stretching valley of Whitcomb, with its central stream rising in Sigwell and joining another stream from the summit

* Proceedings of the Somersetshire Archæological and Natural History Society, Vol. v., p. 38.

of Charnwell, below Cadbury Hill, from which point it flows westward by Sutton Montis and ultimately into the Yeo. Paddock Hill is another detached hill, belonging to this range and situated between Cadbury and Gurt.

The position of the twin-barrow first opened and described by Professor Rolleston on the table land is shown on the sketch (Pl. 1), which it must be observed has no pretension to accurate detail, and is simply an enlargement from the Ordnance one-inch map. Past this tumulus an ancient British roadway runs northward, and turning to the west descends the hill by the steep ravine between the round barrow opened afterwards, and Sigwell, and then running along the north east of the Whitcomb Valley below the hill and beneath Charnwell, takes the direction of South Cadbury. My attention was first directed to the little spur of Sigwell, between the two steep ravines which unite at the six wells or springs from which Sigwell derives its name. (See Pl. 2.)

This spur, it soon appeared evident, had been converted into a camp by means of a ditch about 60 ft. wide uniting the two ravines. The artificial character of this ditch is shown by its direction forming with the two ravines the base of an equilateral triangle, and therefore being in a position in which it would be impossible that it could have been excavated by water flowing along the ravines from the high ground. The rampart, if it ever had one, has been destroyed, but it is possible the earth from the ditch may have been used to form an interior mound. It would appear that the ditch, as at first drawn, formed too oblique an angle with the northern ravine, and that in order to prevent the position from being taken in reverse by missiles from the high ground on the opposite side at R, the ditch was afterwards thrown back on that side; this, at least, appears to me the best way of accounting for the mound H (Pl. 2), composed of undisturbed soil, which has been left in the ditch on the line of the old escarp, and another smaller ditch cut at the back of it; the structure however is peculiar, and may bear a different interpretation. The ditch throughout its length is shallower than the two ravines which form the north and south defences of the triangular interspace; but as the soil is yielding, it is probable that the ravines may have deepened considerably since the place was used for defence, and the inclosed space has probably, by the widening of the ravines at their summit, been much reduced, whereas the ditch not being liable to denudation by water has retained its original depth.

The section A, B, C, (Pl. 3) running through the tumulus and across the camp, shows that the interior of the camp is commanded at the short bow-shot range of about 120 ft. by the summit of the tumulus. I assume, therefore, that it is unlikely the defenders of the place should have allowed such an erection to be made outside their camp at the time it was occupied; and as we have proved by excavation that the tumulus belongs to the Bronze Age, it is a reasonable conjecture that the camp was abandoned at some time previous to the termination of the Bronze period. This is confirmed by finding an unusual number of flint flakes and chips in the interior of the

camp—I say unusual because a considerable portion of the neighbouring ploughed lane was searched by the whole party without finding such an accumulation of flakes in any other spot; so abundant were they that we should have no hesitation in pronouncing such an accumulation of chips to mark the site of a small flint implement factory wherever it might be found. This evidence of the antiquity of the camp must be taken for what it is worth. In my judgment, and what is of greater value, in the judgment of Professor Rolleston and those other gentlemen by whom we were accompanied, it is sufficient to make it extremely probable that the camp is at least as early as the Bronze Age, assuming it to be a work of defence, which I see no reason to doubt. (*See the plan, Pl. 2 and the sections D, B, E, A, B, C, Pl. 3*).

Another hypothesis may be mentioned, viz., that the ditch instead of being a work of defence is simply the continuation of the ancient roadway which, instead of passing down the ravine ran across the top of the hill, and thus the small trench above mentioned is the way down the eastern ravine; this view, however, is rejected by Professor Rolleston and myself.

We have now to consider the value of this conclusion and its bearing upon the topography of the surrounding neighbourhood. It is seen that this camp at Sigwell commands the six springs beneath it. Charnwell also, on the nearest projecting hillock to the north, had been already recognised as a British camp by the Rev. Mr. Bennett, rector of South Cadbury, to whose knowledge of the antiquities of this district we were indebted on so many occasions. The entrenchment at Charnwell, with its ditch on the outside cutting across the gorge of the hill, is distinctly seen on the east side, the remaining sides being defended by natural declivities which as usual in British camps are rarely strengthened by embankments, the only exception being in this case at the west end, where the slope is more gentle and where a small rampart, now used as a division to a field, has been thrown up so as to enclose the spring before mentioned, which rises on this hill and joins the Sigwell rivulet beneath Cadbury.

Both these small camps, therefore, covered springs. Whether there is a camp on Gurt Hill to the south I am unable to say with certainty; my impression is that there was. There has certainly been a low bank with a ditch on the outside across the gorge or narrowest part of the hill, but the greater part of it has been destroyed by a quarry, and there is no spring on this hill that I am aware of. There are also traces of a small bank on Littleton Hill to the north, but not of sufficient extent to afford trustworthy evidence of a defensive work.

Whether there were two or more of these banks, it appears unlikely that such small and feebly-defended camps could have held their own as the strongholds of independent tribes in the vicinity of so large and powerful a fortress as Cadbury, defended by three ramparts and almost precipitous declivities on all sides; and we might therefore assume on *à priori* grounds that they were outposts

dependent on the larger fortress. But other and more cogent reasons may be urged in favour of this assumption. The occupiers of Cadbury had flocks and herds as proved by animal remains discovered in the interior and described first by Mr. Winwood* and subsequently by Professor Rolleston. These flocks and herds must have had pasture somewhere. To the west, as I have said before, the great valley is low, swampy, and probably at that time an impassable jungle. The high, dry, and well watered Valley of Whitcomb, between the camp and the hills, would be the only place in the neighbourhood where these flocks could be pastured; but with the commanding hills to the east, and the springs arising from them in the hands of an enemy, there could be no security against surprise by hostile neighbours who, approaching unperceived from the table land, might at any moment make raids upon the cattle from the hills above. The sources of water supply and the command of the hills must therefore have been a matter of vital concern to the possessors of Cadbury, and the small camps of Sigwell and Charnwell appear to have been thrown up to command the springs and secure an uninterrupted communication with the plateau beyond. From these considerations it would appear that we have here evidence of a central fortress defended on one side, and that the most approachable, by a chain of detached but dependent outposts, which affording as it does some insight into the social condition and military organisation of the inhabitants of this district at a very remote period, may be regarded as being of some interest to anthropologists. That Cadbury was occupied at a later date than that of which I have been speaking, appears certain from the discovery of horse shoes and other objects of iron within the camp;† but if the evidence afforded by Sigwell camp and the adjoining tumuli is to be relied upon—and I see no reason why it should not be accepted, at least provisionally—the first erection of the fortress and its connection with the neighbouring outposts should date from a period not later than the Bronze Age.

MAY 28TH, 1878.

MAJOR-GENERAL A. LANE FOX, F.R.S., *Vice-President, in the Chair.*

The minutes of the previous meeting were read and confirmed.

The following presents were announced and thanks were ordered to be returned to the respective donors for the same.

* Proceedings of the Somersetshire Archaeological Society, Vol. xvi., p. 18.

† *Ibid.*

FOR THE LIBRARY.

- From the REGISTRAR-GENERAL OF VICTORIA.—Patents and Patentees. Vol. IX, 1877.
- From the AUTHOR.—Visitors' Handbook to Weston-super-Mare and its vicinity. By the Rev. W. Jackson, M.A.
- From the SOCIETY.—Proceedings of the Physico-economical Society of Königsberg, 1876.
- From the ASSOCIATION.—Journal of the East India Association. Vol. XI, No. 2.
- From Prof. F. V. HAYDEN.—Bulletin of the United States Geological and Geographical Survey of the Territories. Vol IV, No. 2.
- From the AUTHOR.—Suture anomale dell' osso Malare in sei crani Umani. By Dr. Paolo Riccardi.
- From the SOCIETY.—Proceedings of the Royal Geographical Society. Vol XXII. No. 3.
- From the EDITOR.—Revue Internationale des Sciences. Nos. 20 and 21, 1878.
- From the EDITOR.—Revue Scientifique. Nos. 46 and 47, 1878.
- From the ASSOCIATION.—Proceedings of the Geologists' Association.
- From the ACADEMY.—Atti della R. Accademia dei Lincei. Vol. II, No. 3.

The following paper was read by the Author:—

BUDDHISM in the BRITISH PROVINCES of LITTLE TIBET.

By COLONEL EDWARD PASKE.

Late Deputy-Commissioner of Kangra, Punjab.

A STRANGER to this Institute, and without pretence to having made any anthropological inquiry and research, I feel that some explanation, and indeed apology, is required for my presumption in offering to read a paper this evening.

I happened to show to Major-General Lane Fox, a member of your Council, a short paper I had written on Buddhism in Little Tibet, and he begged me to read it at this Institute. After some hesitation I felt it right to comply, for the reason assigned in the following preface.

“The accompanying paper was written with a desire to assist in making known the labours of earnest-minded and self-denying Missionaries, who are devoting their lives to a good cause in the wild mountainous regions of Little Tibet. Much that is described has come under my personal observation, while on official tours in Lahoul and Spitti in the years 1872, 1873, 1874.

“The paper was only intended for circulation in manuscript among a few friends. I have now placed it at the disposal of the London Association in Aid of the Moravian Missions, having been informed that its publication and more general circulation may possibly awaken and foster an interest in the Mission work.”

For the present occasion, and with reference to the objects of this Institute, I have added some observations descriptive of the people inhabiting the regions of Little Tibet,—their manners and customs, and I have also brought a few curiosities which illustrate the ritual of Buddhism.

I may mention that between the years 1867 and 1875 I held administrative charge of a tract of mountainous country, called the Kangra District, in the Punjab, situated on the outer ranges of the Himalaya Mountains, covering an area of about 12,861 square miles, and containing a population of about 752,500 souls. Included in this district are the outlying subdivisions of Lahoul and Spitti, which form a portion of Little Tibet, and will be the subject of my reading this evening.

I usually visited these subdivisions in the autumn of the year, after the breaking up of the rains, and before the passes, which give access to that part of the country, were closed by the winter snows. My visits were of necessity brief. I had to travel upwards of 200 miles from my head-quarters, making the journey on horseback by regular stages, accompanied by a small portion of my office establishment, and with a sort of flying camp, my ordinary work accumulating the while at head-quarters; and there was always the fear that when once in Lahoul or Spitti, late in the season, a return might be delayed by the falling of heavy snow on the passes. Thus, in these hurried official tours my opportunities for observation were of necessity brief.

It may interest you to be told that on starting from Dhurm-salla, the head-quarters of the district, the traveller proceeds for about 40 miles through what is termed the Kangra Valley, an apt description of which is given in the following lines from the pen of the late Mr. George Barnes, formerly Foreign Secretary to the Government of India.

"I know no spot in the Himalayas which for beauty or grandeur can compete with the Kangra Valley, and those overshadowing hills. No scenery presents such sublime and delightful contrasts. Below lies the plain, a picture of rural loveliness and repose. The surface is covered with the richest cultivation, irrigated by streams which descend from perennial snows, and interspersed with homesteads buried in the midst of groves and fruit-trees. Turning from this scene of peaceful beauty, the stern and majestic hills confront us. Their sides are furrowed with precipitous water-courses: forests of oak clothe their flanks, and higher up give place to gloomy and funereal pines. Above all are wastes of snow or pyramidal masses of granite too perpendicular for the snow to rest upon."

Scattered through the Kangra Valley lie the numerous Tea

Plantations where during the last 18 years European settlers have been engaged in the cultivation and manufacture of tea, with most successful results.

Leaving the Kangra Valley, the road lies for about 50 miles through a wild and mountainous country, the territory of an independent chief: when, crossing a mountain pass about 10,000 feet above the sea, it enters Kulu, another subdivision of the Kangra District. Beautiful as is the Kangra Valley, so well described by the late Mr. G. Barnes, it is almost surpassed by the scenery in Kulu.

Winding through the Kulu Valley, along the banks of, and up to the source of the Bias River, for a distance of 40 miles, the road approaches the passes which give entrance to the subdivisions of Lahoul and Spitti.

I can conceive few sights more sublime than the view from the edge of the Rotung Pass that leads into Lahoul. You stand about 13,500 feet above the level of the sea; nearly 4,000 feet below lies the narrow valley of the Chundra River, and rising like a wall on the opposite side are mountain ranges towering in peaks from 18 to 20,000 feet high. No trace of verdure—wastes of snow and glacier, masses of rock and granite, too perpendicular for snow to rest upon.

“On the slopes of the Western Himalayas in North India, about from 31° to 33° N. lat. and from 76° to 78° E. long. lie Lahoul and Spitti, Tibetan Districts under British rule, which with Zanskar, Ladakh, and Rupchu, situated to the north of Lahoul, and under the rule of the Maharajah of Cashmere, form the provinces of Little Tibet. They border in the east on Chinese Tibet, and in the north on the territory of the Amir of Kashgar. Lahoul and Spitti are entered over mountain passes, varying from 13,000 to 16,000 feet above the level of the sea. The inhabited valleys in those regions are about 11,000 feet above the sea, and the heights of their mountain peaks vary from 15,000 to 22,000.”

Lahoul may be termed a network of mountains, which intersect it in every direction with numerous glaciers; on the western bank of the Chundra rises a peak 21,415 feet above the sea level, to the south of which stretches a vast glacier 12 miles in length, met by another of even greater dimensions. The main elevation of the Lahoul Valley has been computed at 10,535 feet.

In Spitti the mountains are at a higher elevation than in Lahoul, one peak rising to the height of 23,000 feet, and several upwards of 20,000 feet. The main elevation of Spitti has been computed at 12,986 feet.

The country throughout Lahoul and Spitti is rugged and in-

hospitable in the extreme; for six months snow covers the ground, the cold is severe, and the soil yields only one crop in the year.

Buck-wheat and barley are the principal grains produced in the country; these are sown in May and reaped in September. Of vegetables and fruits, there are scarcely any indigenous to the soil; but the Moravian Missionaries have introduced European fruits and vegetables with marked success. The supply of rain throughout the country being so precarious, irrigation is largely resorted to. Capital breeds of ponies are found in both Lahoul and Spitti, hardy sure-footed animals well suited to the country. The "Yak" and the hybrid between the Yak and the cow are universally used alike for the plough and for carrying loads, and their milk is much appreciated as an article of diet. Accustomed to the most bitter cold, the Yak appears to enjoy itself in the most severe weather, finding its own pasture by scraping up the snow in a clever manner. In the winter the animal is often to be seen with icicles several inches in length hanging to its nose, and a foot or so of ice hanging to the hair which falls from its neck and shoulders. Long hairs hang over the Yak's eyes and prevent their freezing. The Yak's tail is of a fine silky wool, and is termed "Choura;" these are largely sold, and set in silver handles, are used by chiefs throughout India in State ceremonies.

The undeveloped mineral wealth of the country is very great. Mines of lead, copper, iron, antimony and probably of silver, exist in different parts. A company was established and capital embarked for working these mines, but owing to the severe nature of the country and climate, the difficulties of access, and a good deal through bad management, the enterprise fell to the ground. The population of Lahoul and Spitti together does not exceed 10,000 souls.

The Lahoulees, who are far from being a comely race, represent an admixture of Hindu and Tartar blood, while the Hindu type of features is not unfrequent. More generally oblique eyes, flat faces, and large mouths betray the Mongolian origin. The people of Spitti bear on their faces still stronger proof of Chinese or Mongolian descent, and are generally, both men and women, larger and more strongly built than the Lahoulees. In both countries the language is Tibetan, but in Lahoul more frequent intercourse with strangers from Hindustan has led to the introduction of Hindi and Urdu in some parts.

The dress of the men in Lahoul usually consists of loose woollen trousers, grey in colour, with short coat of the same material, and in winter a third woollen blanket, brought round the body and thrown over the shoulder, somewhat after the fashion of a Highlander's plaid; on the head a kind of skull-

cap, with flap to cover the neck and ears; simple straw shoes are usually worn.

In Spitti the costume of the men is somewhat different, being more elaborate and with more prominent and mixed colours. In Spitti also it is the custom to shave the greater part of the head, leaving only a pig-tail which hangs down. A "Chukmuk" or strike-light, and a steel-pipe, specimens of both of which I produce, and also a tobacco pouch, are usually worn in each man's waist-cloth. Men and women alike wear ear-rings and necklaces, usually of turquoise and coral mixed with glass, crystal, and pieces of amber. The specimens of turquoise and amber that you will observe on the table, are some that I purchased in Lahoul: a stone here and a stone there taken by the vender from his own necklace and sold on the spot.

The women in Spitti and in neighbouring provinces wear a very peculiar head-dress, consisting of a broad band of red cloth studded with large turquoise and other stones, and arranged to hang from the brow down the back of the head and neck to the waist, which is called a Pirak. Usually a Pirak forms part of the dowry given to the bride by her parents, and the value of the ornaments varies according to the means and position of the family. The Nono, or chief man in Spitti, when once asked why his grown-up daughter was still unmarried, replied that he had not been able to secure all the ornaments for her Pirak. On one occasion, when resting near a Tartar encampment, I tried to purchase a Pirak from an old Tartar woman, but we could not come to terms about the price. I offered Rs. 100 or £10, while she would take nothing less than Rs. 150, and as the band of the Pirak was very old, greasy, and dirty, I declined the bargain. Subsequently one of the chief men of Lahoul had made for me, at a cost of about £5, the small Pirak I now show you.

The people of Lahoul and Spitti are peaceful and orderly, for the most part engaged in agriculture; they have few handicrafts, and these of the rudest character, except that in Spitti good blacksmith's work is to be obtained. The Lahoulees are great traders, importing from Lahoul and Yarkund, wool, borax, sulphur, and churrus (a species of hemp) with other products of those countries, which they exchange for opium, sugar, cotton goods, and other commodities of India, which they purchase in Kulu. Some of these traders are most enterprising and endure great hardships in their perilous journeys over the highest mountain passes. The month of October, when I usually visited Lahoul, was the season for the return of the traders, and on each day's march I would meet droves of laden ponies and mules, and flocks of sheep and goats, each animal laden with a small pack of borax or churrus. Frequently, too, the hill sides, and the

valleys below, wherever fuel, water, and pasture were obtainable, would be dotted over with Lahouli encampments, the tents, generally speaking, being nothing more than blankets spread over with cross poles, with bales of goods heaped up on the exposed side for protection from the wind. Large and powerful sheep-dogs are to be seen in every encampment; these are excellent watch dogs, not only do they keep strangers from the tents, but they protect the flocks from wild animals. These powerful dogs are not slow to attack a leopard or a bear, and as wild beasts always try and seize them by the throat, each dog is protected by a very broad iron collar, heavily spiked with large nails.

Polyandry prevails to a great extent both in Lahoul and Spitti, and once married the wife is the common property of all the brothers, not one of whom can claim the special paternity of any particular child. Polygamy too exists in some localities when men are well to do. Betrothals take place very early in life; the betrothal and marriage ceremonies being most simple, the marriage tie sits lightly and divorces are readily obtained.

As in all countries where Buddhism is rampant, the eldest son succeeds to the property, and all the younger sons become Lamas or priests. But in Lahoul most of the Lamas marry and cultivate lands, and have very little of the monk about them.

"The religion of Lahoul, Spitti and Ladakh is a modified form of Indian Buddhism, introduced into Ladakh about two thousand years ago. It was spread into China at the beginning of the Christian era, and into Great Tibet about the middle of the seventh century. The main difference between this form of Buddhism and Hinduism is, that the Buddhists rejected the whole of the Brahminical system of gods and goddesses, and adhered closely to the spiritual worship of the Vedas. The priesthood among them was not hereditary, but formed a distinct community, recruited from the regular ranks, and supposed to observe a vow of celibacy and to renounce the pleasures of sense.

"Sukhya Muni, the traditional founder of the Buddhist faith, is usually called Sukhya Thubba, or the mighty Sukhya. The Buddhist Triad, called in Sanscrit Rutna Trayāya, or the Three Gems, is styled Kom-chlok Sun, or the three Supremacies, by the Tibetans, who give the following names to the different members of the Trinity.

"1. Buddha is Sangya Kon-chok, or the Supreme Intelligence.

"2. Dharma is Chhos Kon-chok, or the Supreme Law.

"3. Sangha is Gedun Kon-chok, or the Supreme Congregation.

"In the earlier periods of Buddhism, the worship of the people was confined to the holy triads of Buddha-Dharma and Sangha.

In the present day their worship is equally given to other Buddhas—Padma Pani, Jamsa, and Chanrizak.

“The self-existent Adi Buddha by five spontaneous acts of divine wisdom (*jugán*), and by five exertions of mental reflection (*dhyán*), created the Puncta Dhyani Buddha, or Five Celestial Buddhas. Each of these Buddhas again by the mere exertion of his inherent *jugát* and *dhyán* is said to have created a *Buddhisatwa*. All the above are celestial beings, the spontaneous emanations from the Divinity, who have never been subject to the pains of transmigration. Inferior to these are the created or mortal beings, divided into six classes, named the six advancers or progressers, because their souls progress by transmigration from one state to a better state, until they finally attain absorption into the divine essence, after which they are no longer subject to transmigration. The six classes are ‘Gods,’ ‘Demi-Gods,’ ‘Man,’ ‘Brutes,’ ‘Goblins,’ ‘The Damned.’ It is one of the most essential dogmas of the doctrine of transmigration, that the disembodied soul is incapable of receiving either reward or punishment. Hence the belief in other grades of mortal beings, both superior and inferior to man. The good man after death is supposed to be raised to the dignity of a demi-god, while the bad man is degraded to be in the state of a brute; a rise or fall in consequence of works done in a former state. This transmigration is the punishment of sin, and only by a total expiation thereof can the soul cease to be re-born. The process of transmigration is gradual, going on through an infinite succession of time, inasmuch as the soul must pass through all the lower stages, and thus gradually expiate its sins, before it can reach the more exalted state, and attain its final resting-place. What each new phase of life will be, is determined by the state in which a man last died. The moral law of Buddha prescribes a life high and pure, a constant straining after perfection, in order to secure that blissful state of rest which is the only emancipation from a state of eternal transmigration.

“Formerly the Great Abbots or High Priests were elected by the Priests. Now, however, there is a system of supposed perpetual incarnation. Every successor of the Grand Lama is regarded as an incarnation of the great deity, and as the throne in course of time becomes vacant, on each occasion it is the object of the priesthood to find an infant supposed to possess distinguishing divine marks, and to consecrate him as the Great Lama. The present two great spiritual successions are the Dalai Lama, or High Priest of Lhasa, and the Panchen Rimpoches of Teshu Lampi. The Dalai Lama is called *Gyalba Rimpoché*, ‘the Gem of Majesty,’ and the Tashi Lama, ‘the Gem of Learning.’ A priest or monk is styled ‘Lama,’ and a nun ‘Ani.’ High as is the standard of morality prescribed for every follower of Buddha, that of the Lamas or Priests is more rigid still. They may have but one meal a day, wear a dress of rags sewn together by themselves, and are bound by a vow of celibacy and poverty. During part of the year they must live in the open air, spreading their

carpet under the shadow of a tree, and there sitting immovably in contemplation, or meditating on their own sins, not allowing themselves to lie down even in sleep. In practice, however, the standard of morality is sadly low; some of the Lamas marry, too many lead grossly immoral lives, and most of them take to their calling mainly as a means of living easily at the expense of the people. Among the Buddhists there are different sects, the two chief of which are the Red Sect and the Yellow Sect, distinguished by the colour of their dress. A remarkable feature in Buddhism is the resemblance of some portion of their ritual to that of the Roman Catholics. The first Roman Catholic Missionaries who penetrated into Tibet were amazed at finding rites and ceremonies similar to some of those of their own Church—chanted litanies, the use of incense, processions carrying banners, confession, adoration of relics, ringing of a small bell during service, priestly robes and shaven crowns, monastic celibacy, ascetic separation from the world, orders of monks and nuns, working out life-long penances, ritualistic altars with images, the use of rosaries, long strings of black beads told while muttering.

“During his last journey in Lahoul, the writer secured specimens of the chief ritualistic instruments of the Buddhists, viz.—The Bell, the Sceptre or Thunderbolt, and the Prayer Cylinder, and they deserve some description.

“1. The Bell is called Drilbu, and is used in the performance of daily services. In paintings of the great Lama it is usually represented in the hand, or on the throne by the side of the great priest. The bell purchased by the writer was obtained from a monastery in Ladakh, was originally brought from Lhasa, and is believed to be about 300 years old. The bell is of well-sounding metal, on the upper part are syllables said to represent the notes of the bell, and inside are the monosyllabic interjections ‘Aum! Ah! Han!’ The handle has a representation of the sceptre.

“2. The Dorgé, sceptre or thunderbolt, is a holy instrument, said to have fallen from heaven, and to have alighted in a monastery at Lhasa, where the original is still retained. It is called in Tibetan ‘sera-pun-dze;’ an annual festival has been established in its honour, and is one of the principal religious fêtes. An imitation of the Sceptre is carried about by the Lamas or Priests, and is used in subduing evil spirits. These imitations are of copper or other metal, about four inches in length.

“3. The Prayer Cylinder, called ‘Mani Chhos Kor,’ is a metal cylinder, with the axis prolonged below to form a handle. The cylinder is filled with rolls of printed prayers and charms which revolve as the instrument turns, each revolution of a prayer being equivalent to its recitation. The formula usually inscribed on the rolls is ‘Aum mani padmi hun,’ an invocation ‘To the Jewel on the Lotus,’ in reference to the Lotus throne, that is to say the pattern symbolical of the Lotus or water lily, with which Buddha’s throne is always adorned; ‘Aum’ or ‘Om’ is equivalent to the Hebrew

'Jah,' the holiest and most glorious title of the Almighty; 'Mani,' the jewel of Buddha's titles; padmi is the Lotus; Hun, or Hoong, is equivalent to Amen. The prayer-cylinders vary in size from little hand-mills, as large as a policeman's rattle, to huge things ten and twelve feet in diameter. In the monasteries there are rows of cylinders set up along the walls, and so arranged that the passer-by can set them all revolving at once by drawing his hand along them as he passes. The Buddhists trace back the prayer-cylinder for at least 1400 years, and believe it to have originated from the notion that it is an act of merit, and a cure of sin, to be ever reciting portions of the sacred writings of Buddha; but as so many could not read, it was deemed sufficient to turn over the rolled manuscript. It is iniquitous to turn the prayer-cylinder the wrong way.

"A peculiar custom of the Buddhists is the erection of stone-dykes or walls, several feet high, at the entrance of towns and villages and in main lines of road. Upon these dykes the people heap slabs of slate or stone, on which are inscribed certain 'Mun-tras' or prayers, the usual one being the invocation, 'Aum mani padmi hun.' These slabs are votive offerings from all classes for the attainment of some particular objects. Does a childless man want a son, a merchant about to travel hope for a safe return, or a husbandman look for a good harvest, or a shepherd for the safety of his flock in the winter, each goes to the Lama or priest, purchases a slab on which the priest carves the prayer, and it is then deposited on the village mani or dyke. In depositing a slab, it is necessary always to move to the right; to go round the left of the dyke is almost as unlucky as to turn the cylinder the wrong way. These manis or dykes, on which numberless slabs have been heaped, always attract the eye on approaching a village. In Ladakh there are two manis measuring upwards of 800 paces in length.

"It is customary also among the Buddhists for the Lama to keep small wooden printing-blocks, engraved with some prayer, from which the prayers are printed on little flags or pieces of coarse cloth. These flags are sold by the priests to travellers and others going on journeys and expeditions, and they are deposited on cairns or on projecting rocks on high mountain passes,—the higher the mountain the nearer to heaven, and the more desirable the position. On one occasion, when crossing a mountain pass in Lahoul about 15,000 feet above the sea, the writer observed a rag fastened on a stick stuck on the top of a cairn on the highest accessible point on the pass; he secured it with much difficulty, and found it was a prayer-flag.

"In noticing the Tibetan printing-block, it is desirable to mention that printing has long been known and practised in Tibet, but only by engraved stereotype wooden blocks, and not by movable type. New works are rarely undertaken, but the printing of their standard religious treatise is still carried on by the Tibetans with the same old blocks that were in use upwards of 100 years ago. The great mass of printing is chiefly confined to the production of the innu-

merable quantity of prayers and mystical formulas that are required by the people.

"The Tibetans reckon time by cycles of twelve years, each cycle being named after a particular animal. Long rolls of paper are made into calendars, with woodcuts representing the animals after which each cycle is named. The rolls are placed in brass cylindrical boxes, and are worn as amulets by traders and travellers.

"The Lamas or priests are so much venerated by the Buddhists that on the death of any noted Lama his body is burnt, and the ashes mixed with clay, are worked up into small medallion figures, and preserved with much care. These figures are called 'Tsha' or image, and in the temple of every house there is a small room or cupboard, called the Tshakhanga or image room, set apart for the reception of these medallions. In one temple a traveller saw about one hundred cubic feet of space filled with them.

"The Monastic system is of very ancient date among the Buddhists in Tibet. The monastery is termed 'Gonpa,' or solitary place, because monasteries were originally built according to the directions of the founders of the creed, far from the bustle and disturbing influences of cities; convents are only separate monasteries, walled off from the rest of the buildings. While these monastic institutions are supposed to afford a refuge from the sinfulness of the world, with such retirement as might help to a life of celestial meditation, there is too much reason to suppose that they are hot-beds of vice of every description.

"The monastery at Kyelang in Lahoul has quite the character of a 'solitary place;' it stands on the projecting spur of the mountain side, distant from all other habitations, at an elevation of upwards of 12,000 feet above the level of the sea, and is approached by a steep and difficult path. The deep ravines and glacial beds that are observed in the neighbourhood add to the wild grandeur of the scenery. At some seasons the approach is even dangerous, and in the spring of 1874 a monk and a nun were buried in an avalanche, while wending their way up the path. The building itself is of considerable extent with a flat roof ornamented with flags; its outer walls are plastered with mud and whitewashed, having strong projecting verandahs. In the interior are galleries, along the walls of which are arranged numerous praying wheels, a lofty apartment used as a kitchen, a library full of collections of holy books wrapped up in silk, and numerous banners, masks, drums, trumpets, cymbals, bells, mitres, staves ornamented by the trident, and many other things used on festive occasions. Near the library is the great hall in which are the statues of Buddha and his disciples; some made of wood and clay are more than life-size, and other smaller ones are of metal, all decked out in robes of different colours. Numbers of brass and silver oil-lamps are placed before the images, and near receptacles for offerings of all kinds. The walls of the entrance gallery and of the great hall are ornamented with decorative paintings representing subjects from Buddhist mythology, some of them very well coloured, and showing considerable artistic skill.

The roof of the hall is supported by massive beams garnished with belts, swords, yaks' tails, huge and terrible masks, and all sorts of odds and ends. On one side of the apartment is a huge praying-wheel about ten feet in height and five feet in diameter, and on each revolution of the same a bell is struck. A dim subdued light prevails throughout this chamber, which exaggerates the ghastly hideousness of the huge figures, and gives the appearance of a chamber of horrors. Outside the main building are rows of cells occupied by the monks and nuns."

At this monastery I met a Lama who had travelled in China, and had then just returned from Llassa. This priest was a painter, and I found him engaged on a large picture, representing the triumph of Buddhism, for the gallery of the monastery. On receiving a suitable present he executed for me the small copy of the picture which I now show you. The principal figure in the picture is "Padmer Sambhana," also called by various other names, an historical personage chiefly instrumental in establishing a modified form of Buddhism in Bhutur, Sikkim, Lahoul, and Ladakh. He is seated on a Lotus which grows out of a lake with its leaves turned upwards; gold-fish swim in the lake and water-fowls are above; deer, antelope, and a unicorn are on pasture grounds around the lake. He carries a trident with three heads as a sign of his perfection, and representing the Buddhist Triad; in his hand he holds the vial of life, and the sun and moon on his mitre mean that he shines with heavenly brightness. The figure above his head is the personification of eternal life. In the left corner below is represented the same Padmer Sambhana in his ferocious aspect, the figure on the right being the chief of the feminine demons of the air, carrying the trident. Both are punishers of those who try to destroy the religion of Buddha; the figure under the foot of the one on the right is a mortal undergoing punishment: the beads worn as a necklace or rosary by the figure on the left are of those who have been punished for their sins. In the corners above are the pictures of two holy Lamas, that on the left, the first great Lama of Bhatua, that on the right representing the grand Lama of Tunskai, who died about 24 years ago. The Hungarian traveller Osomo de Koros studied the Tibetan language in his monastery, preparing afterwards a very useful dictionary of that language.

"The monastery at Kee in Spiti is larger than that at Kyelang, with more extensive chapels, store-houses and dormitories. It has the appearance of a hill-fort crowning an eminence.

"In the different monasteries large and varied assortments of costumes are kept for use in the spirit-dances and other religious performances. In the richer monasteries in Tibet Proper there are extensive wardrobes of great value, and the monks in their per-

formances change their costumes very frequently and with great rapidity."

On the occasion of my last visit to Kyelang, the monks gave me a performance of their spirit-dance on a plot of level ground outside the monastery. The Abbot in full canonicals, with a scroll of parchment, supposed to be covered with sacred music, attended by musicians with large trumpets, cymbals, and other instruments, took his position on the ground, and when the musicians were playing their loudest, suddenly from a side door of the monastery there rushed out 30 or 40 monks, attired in the most grotesque and startling costumes, their heads covered with large and well-executed masks, representing the heads of wild animals, serpents, and demons; these all danced in a most wild and excited manner, making hideous noises, and every now and then rushing into the monastery to don costumes still more grotesque. These figures are supposed to represent the demons of the air, who torment the souls of the wicked undergoing the process of transmigration. This entertainment, held on a wild lonely spot, on the mountain side, upwards of 12,000 feet above the sea, the light of the torches exaggerating the hideousness of the figures, formed one of the most startling spectacles I have ever witnessed.

The spirit dances cause great terror among the ignorant and superstitious people of the country, and form a means by which the Lamas exercise their hold upon their minds.

"The present observations on Buddhism, its ritual and customs in Northern India, can very appropriately be closed with a brief notice of the history and operations of the Moravian missionaries, who are doing good work among the Buddhist tribes in the Tibetan districts of Northern India.

"In 1853 two of the Moravian brethren were commissioned to proceed through Western Tibet to Mongolia, but failed to make their way through Russia and the Kirghese steppe, having been refused the needful passports by the Russian Government. They then took the route through India and journeyed through Lahoul and Ladakh to the border of Chinese Tibet, where their further progress was stopped by the authorities. Returning for a time to British India, they made another advance to Ladakh, but were prevented settling there by the ruler of the country, the Maharajah of Cashmere. Finally, the missionaries decided to settle in the British Tibetan province of Lahoul, conterminous with Ladakh, and they selected as their place of residence the village of Kyelang, at an elevation of between 10,000 and 11,000 feet above the sea. At once they entered into intercourse with the people, acquired a knowledge of their language, and engaged in itinerating through the province.

"In 1857 the two brethren, Heyde and Pagell, were joined by a

third missionary, Brother Jaeschke, who rendered good service in translating the Scriptures into Tibetan. Two years later they established a lithographic printing-press on the Mission premises, from which they have issued translations of the Holy Scriptures and of useful religious and educational works. Books and tracts from this press have been very freely circulated in all the adjacent provinces where the Tibetan language is used, and have proved the means of doing much good.

"Some idea can be formed of the remoteness and isolation of the position occupied by these missionaries, when it is mentioned that the Tibetan village of Kyelang is situated nearly forty miles in the interior of Lahoul, the most remote province of the North-east frontier of British India, and bordering on the provinces of Zaskar, Ladakh and Rupchu. To enter Lahoul it is necessary to cross two or three mountain passes, the last and highest being the Rotang Pass, about 15,000 feet above the sea—a pass closed by the winter snows from November till May, so that for more than five months in the year the missionaries have no communication whatever with the outer world. Owing to the severity of the climate, and the heavy falls of snow in Lahoul, they are sometimes shut up in their houses for two and three weeks together. This isolation is much felt, especially during the severe winter weather, and two or three graves in the little grave-yard below the Mission garden tell that some members of the Mission family have ended their days in that distant and remote valley.

"When on an official tour in Lahoul in the autumn of 1874, the writer of these observations spent some days at the Mission Station of Kyelang, where he was most hospitably entertained by the brethren Heyde and Redslob and their wives, and where every opportunity was afforded him of examining the Mission work. While he saw many gratifying proofs of the good that is being done, he had abundant evidence of the honest labours, earnest zeal and great worth of the missionaries themselves. The Station is a most interesting little settlement. The premises include a large well-built substantial house in which, besides the accommodation for the missionaries and their families, there is a large room set apart for use as a chapel, and a guest-room for travellers and visitors, who are always welcomed. There are out-buildings appropriated for the schools, the lithographic press work, for dispensing medicines, for stores and other purposes, and around these buildings are well-kept gardens and orchards. Through the instrumentality of the authorities the missionaries have lately secured a tract of waste land, about 200 acres in extent, on the mountain side several hundred feet above the station, where they are establishing a farm, and have already brought a considerable extent of land under cultivation. But here they have many difficulties to contend against; their lands are at a level of 12,000 feet above the sea, and for irrigation purposes they have had to carry a watercourse for upwards of two miles from a distant glacier. The farming operations, as they are extended, will give industrial occupation to the

natives around, and the produce will form a valuable addition to the present scant grain and grass supply of the valley, and will in time facilitate the furnishing of supplies for traders and travellers.

"A second Moravian Mission Station in charge of Brother Pagell was established some years ago in the Tibetan village of Poo, in Upper Kunawur, close to the border of the Chinese Tibetan province of Tsotso, and distant twelve days' journey from Kyelang. This station the writer was not able to visit, but similar good work is being done here, as at Kyelang. An interesting account of the Poo Mission is to be found in a work entitled "The Abode of Snow," by A. Wilson, recently published in *Blackwood's Edinburgh Magazine*.

"The Moravian missionaries contemplate an advance farther north, and hope to establish a station at Leh, the capital of Ladakh, so soon as the objections of the Maharajah of Cashmere can be overcome, and his permission obtained for the commencement of a Christian Mission in that part of his territories. For their missionary purposes no better position could be occupied. Leh is a considerable town, with a large Buddhist monastery in its immediate neighbourhood; it is the centre or meeting point of four lines of traffic, and is on the high road between Cashmere and Lhasa, the great seat of Buddhism in Tibet. Even in their comparatively remote station at Kyelang the missionaries have from time to time collected valuable information regarding the affairs of countries of central Asia, including Ladakh, Kashghar, Mongolia, Chinese Tibet, and Tibet Proper. Advanced to Leh, they would be in a position to add greatly to their stores of information and knowledge of those countries.

"The lofty spirit of self-abnegation with which the Moravian missionaries have laboured for so many years in their remote settlements on the Northern frontiers of British India, can best be understood and appreciated by those who have visited their station. Far removed from civilized life, themselves simple, frugal, and self-denying, they spend their days in labouring hard for the spiritual and moral good of the simple Tartar people around them. Much they have endured with the most exemplary patience, and much they have overcome. Nor is the Mission work of the Moravians in Northern India to be judged only by the number of the converts; their labours are varied and extensive; they have conducted considerable educational operations; their linguistic work has been valuable; they have scattered Christian publications all over the Tibetan speaking countries; in their printing-presses and agricultural operations they afford industrial occupation to a considerable number of the natives of the valley; with the limited means at their disposal they do all in their power to ameliorate the condition of the sick and the poor; and by their active energy and general high standard of life afford the best example to all around them."

DISCUSSION.

Lieut.-Col. GODWIN AUSTEN remarked: The paper we have heard this evening contains much that is of great interest to myself, from having spent three summers in Ladakh and Zaskar to the North, and I can testify to the magnificence of the scenery with the grand glaciers that run down from the higher parts of the ranges, separating the above districts from Kulu, &c.

I found also that the women of Ladakh have a very great objection to parting with the head ornament called "*kúkúl*" in Ladakh. Nor is this unnatural; the stones sewn upon the strips of red cloth are difficult to collect and are heirlooms handed down from mother to daughters, as the gift of friends; the intrinsic value may not be much in our eyes, but even our own womenkind would strongly object to sell ornaments off their persons, and the Ladakhi women resent such offers in the same way.

Placing flags or little pieces of rag on cairns upon the mountain passes is to be seen throughout the Himalayas of Ladakh to Bhutan, they are not always printed as in the example shown this evening, but red, blue or black, and white pieces are sometimes seen significant of the Trinity: 1, Gamiang; 2, Chokdor; and 3, Chandrazik; emanations from Śākhyā Thuba; this custom is I think a remnant of a very ancient primeval belief, as it is to be seen in the Naga Hills (connected with gods of streams, hills, &c.)

An excellent account, and the best I know, of these people and of their religion and customs, is to be found in General Cunningham's "*Ladakh and Surrounding Countries*." Hodgson, who was a long time in Nipal, has written much on same subject in the "*Journal of the Asiatic Society of Bengal*."

I must differ with the author of the paper as to the exceeding bad characters of the Bhuddist Priests,* and with all those who are so ready to make out that they are so immoral. I saw much of them, knew many intimately, often put up in the monasteries, and had good and better opportunities than most men of judging, and I really do not consider them very different from the same class in many European countries; there is the same proportion of bad, but a great number of steady, good, hard-working men engaged in their religious duties and, a great deal of their time, in the education of the youth of the country.† Many are well read, clever men (educated in Llassa), clever draftsmen, painting on cloth and decorating the walls of the religious buildings, and I have had them come to me to learn perspective.

Mr. HYDE CLARKE said that while Buddhism was, as stated by

* "*Hot beds of vice*" was the term used with regard to the monasteries,—I think a missionary point of view.

† The number who can read and write are in excess of what might have been found in many parts of England a few years ago, and none of them are so brutalised as specimens in this country and this city

the author, a reform of the older Indian mythology, yet several of the practices described belonged to the infancy of prehistoric mythology, whilst others illustrated the local modifications to which Buddhism in common with all religions was subject by the influences of the various regions in which it was adopted. Col. Paske had been engaged in the administration of some of the most interesting provinces on the frontiers of India, and none the less interesting because they belonged to those he called Hill regions, in which new English communities were being slowly and surely built up.

Mr. HOLT would be glad if Col. Paske would tell the meeting whether a Buddhist faced in any particular direction while turning the prayer drum, and if the revolutions round the circles were not always made from east to west. He would also like to know if the Buddhists had not, like ourselves, four festivals corresponding with the winter and summer solstices and the spring and autumn equinoxes. He asked this because he had always been accustomed to associate Buddhists with solar worship, and what Col. Paske said tended much to confirm that impression.

The Rev. WYATT EDGEELL observed that if primogeniture was general and all the young children became Lamas, the number of these must be very great; that such is the case however appears from the account of two travellers whose camel drivers were Lamas.

MR. HYDE CLARKE exhibited a carved stone object, which was stated to have been received from Central America.

The following paper was read by the Director.

NOTES *on the PIOJES of the PUTUMAYO.* By ALFRED
SIMSON, ESQ.

THE chief tribe of Indians inhabiting the borders of the Upper Putumayo seems to have no special appellation, but a portion of it—that least known—whose component members dwell principally on the banks of the branch river Cocaya goes by the name of *Macaguajés*, and is claimed as part of their own people by the others whose customs and mode of life have become somewhat modified by frequent contact with civilization.

A tribe of Indians occupying the middle and lower Aguarico

and a considerable stretch of the left bank of the Napo, speak the same language, and have several traits in common with these Upper Putumayo Indians, from whom, however, they are entirely separated by tribes speaking various languages and holding distinct customs.

The Aguarico and Napo hordes referred to are known as the Santa Maria Indians, or Piojés, from the word in their language *piojé*. The latter denomination appears preferable as at once identifying unmistakably the whole tribe, whilst the former merely designates a single limited locality on the Napo, occupied by one of their hordes. I should propose hence to call all the Upper Putumayo Indians who speak the Piojé language, *Macaguájes* or *Piojés of the Putumayo*.

As my personal observation of and acquaintance with the Piojés of the Putumayo extended only to those living on the banks of the main stream, during long journeys with a number of them selected from different villages, and visits and sojourns in most of these, I shall treat merely of this portion of the tribe. Of the Macaguájes dwelling on the Cocaya my slight knowledge consists in having casually met some of them in their canoes on one or two occasions, when I noted that they spoke the same language as their more civilised brethren, and these informed me that they considered them as part of their own people.

The dwelling-places of the quasi-civilised Piojés are, following the downward course of the river, San José, Cuembi, Yaso-toaró, Picudos, Montepa, and Consacuntí, where they receive periodical visits from the cura who baptises the children and marries the betrothed, or rather confirms by the blessing of the Church the matrimonial relations often already entered upon during his absence.

The Christianity of the tribe is not of the most enlightened, for religious instruction and teaching of the children is quite wanting. In past years in this respect more advancement than at present had been made under the Jesuits as the names of various spots here as in other higher Amazonian regions, now covered with profuse vegetation and almost unrecognisable from the surrounding forest, testify, such as Miécuntí, Tapa-cuací, and La Concepcion, in the last of which traces of a brick Mission Church may still be found under the entangled growths.

The Piojés, like most of the Christianised Indians on the eastern slopes of the equatorial Andes, understand little or nothing of the religion they have adopted, or which in more truth has been forced upon them, and their habits, customs, and gross superstitions form strange features in a people who go

by the name of and call themselves Christians. The only assumptions they really have made of rites and habits common to Christianised peoples are baptism, marriage, drunkenness, smoking, and occasionally better clothing than is natural to them. All these rites, habits, and vices they submit to with a good grace, excepting marriage, the necessity of which is generally found very irksome and an interference with their liberty which they would fain be without. Those individuals, however, who have undergone the three main qualifications—baptism, marriage and clothing—are conscious of a sort of wholesome pride in their superiority, for they feel that they are more nearly approached to the civilised “blanco.” Upon one of their most intelligent individuals, a man named Cimon, introducing according to his fashion an Indian of the Oregon tribe, who had lived with them for many years, to me, and evidently thinking that I might depreciate or despise a member of a savage heathen tribe, he at once informed me that his friend was not an *Auca*, but a Christian and “gentleman like ourselves,” meaning himself and me. (“Ese hombre Auca no tiene, caballero tiene como nosotros.”) The term *Auca*, as elsewhere explained, signifies heathen or barbarian, and is applied by all the Christianised Indians of the eastern Ecuatorial Andes to their wilder uncatechised brethren, and of these all who have come into contact with whites or Spanish-speaking Indians deprecate the designation for themselves.

Most of the tribes I have come across, as for instance the Jívaros of the Pintuc and the Piojés of the Aguarico, who know nothing of Christianity, but who have heard of baptism, are most anxious to have their children baptised and call upon one to do it for them; the former also wanted me to perform the marriage ceremony for them. Whilst recording such evident desire to adopt Christian rites, it is regretful that one should have to entertain the fear and even the firm conviction that these wholesome desires do not proceed from any religious feeling awakened in them but merely from the vain anxiety to imitate such customs of the whites as to them smack of high respectability. It is in no cynical spirit that I make this statement, and indeed their inclinations in this respect might be of great value in the commencement of mission labour, only it would be deceiving oneself to imagine that any stir of conscience had taken place within them. Amongst none of these Ecuatorial Indians, even the best taught, have I seen that by religious instruction any of their own superstitions had been effaced, and it is only by steady education of the young that in following generations positive moral advancement can by degrees be hoped for.

That the Putumayo Piojés are monogamous now must be scored in their favour as a point of advancement, for, though I quote no evidence or hearsay to the effect, it can hardly be doubted that, probably not long ago, they were polygamous in common with all the other neighbouring tribes whose customs have not been modified by contact with white men.

As regards drunkenness they certainly do not look upon it as a vice; they experience no shame when upbraided with it; and unlike our casual drunkards, so prone to accuse others of being under the influence of liquor and denying that they themselves are, these Indians when tipsy at once admit their state and seem highly pleased to find themselves in such a creditable condition. When the intoxication is in moderation the most taciturn become loquacious, and when it is excessive, broils and even serious fights are almost sure to result, especially if any individuals belonging to different villages be present together.

It is particularly sad that this vice should have become inculcated by the pioneers of civilization into this tribe, for they themselves appear to manufacture no fermented liquor, their only drinks being ripe plantain boiled and mashed in water, and "yoco." I have not seen either of these beverages left to ferment. "Ayahnasca" the direful excitant of the Napo Piojés, and the wide-spread fermented cassava, "Chicha," are never to be seen with them. "Yoco" their favourite beverage, is a liana, the bark of which in its green state is scraped off, kneaded and mashed in water and then thrown out. The remaining liquor assumes a yellowish brown, not unlike a simple dose of ipecacuanha in colour, general appearance, and even, with modification, at the first moment in taste. Although the first taste is nauseating and bitter, the after-taste remaining on the palate is refreshing and not disagreeable. "Yoco" is imbibed at all hours; in the early morning much diluted and in a larger quantity as an emetic aided by titillation of the throat with a feather, and at other times in stronger but smaller doses as a refreshment and sustenance.

They are also very fond of tobacco macerated with water to the consistency of a thin paste. This is kept in a bottle and the feather or little stick that always stands in it is put into the mouth and then drawn out through the closed lips to remove the adhering relish.

A few words must be said about the last before-mentioned adaptation of these Piojés to civilised habits, namely clothing, and we must, when considering dress from an Indian's point of view, always keep in mind that to him it is more adornment than a veil of modesty and decency. In the case of some wild

tribes, as the Oregones, Cotos, Tutapishces and the Aguarico Piojé women, clothing is entirely, or virtually within a degree thereof, dispensed with. It must not be thought, however, that I desire to imply that the peoples enumerated are devoid of modesty. I myself firmly believe that true modesty and virtue may be compatible with nudity; but that general question is foreign to this paper, and I merely wish in this case to state the fact that these and most Indians adopting more complete clothing than is their wont is certainly, at least at first, not brought about by anything that can be assigned to feelings of modesty or shame.

Those amongst the Putumayo Piojés who have travelled recently, either upwards to the mountains, or more especially downwards to the Solimoens, are generally furnished with trousers and jacket of common cloth, but their own dress is far more becoming. One who had been with me during the greater part of my upward journey on the river, I left at his native village, Consacuntí, in trousers and jacket, but on my return he had adopted his own costume, and for some time after he had saluted me, I did not recognise in the fine figure before me one of the most active, energetic, untiring, and merry of my band. Before he had a very common-place appearance, but now he looked like the finest type of an Indian that romance could paint. His splendidly formed figure was clad in the peculiar Indian poncho, a long piece of cloth the breadth of the shoulders with a slit in its centre for the head, in front and behind hanging nearly down to the knees. The sides are sewn together only on both hips so that the arms have free play, and the legs are laterally visible from the upper part of the thigh downwards. This was the only garment, and the rest was all ornamentation. On his head was a circlet of dazzling metallic blue feathers with three long red caudal plumes of the macaw standing erect; round his arms and wrists tight-fitting bracelets of fresh green leaves; a line of white monkey's teeth encircled his neck and across one shoulder, around his body hung a long double string of black seeds. The greatest admiration this picture attracted though was to the broad shoulders, faultlessly shaped limbs, and the lithe but gracefully erect figure.

A curious feature in the Piojés is the absence of eyebrows and eyelashes, which are all religiously pulled out. The septum of the nose is usually perforated, no doubt originally for the insertion of some ornament, but now they seem rather ashamed of this and wear nothing in it.

The Piojé villages are, like I have had occasion to describe those of other Indians elsewhere, very far from being the settled

habitations the civilised might be inclined to imagine. In many cases the names of the villages are mere localities with a few miserable sheds scattered here and there at considerable distances from one another, as for instance is Montepa. This settlement was formerly more compact, but since a couple of years its inhabitants abandoned their houses and have been sojourning in temporary shanties disseminated in the neighbourhood of their former dwellings. Inroads of diseases, ants, or floods, are frequently the cause of the changes and shifts of the home from one place to another, and the family removals, although not such as are announced in large letters in our metropolis, are effected in the lonely Putumayo woods with all promptitude and ease. An Indian thinks nothing of leaving his house with goods, chattels, wife and children at a moment's notice to emigrate and establish himself elsewhere.

Their sense of hearing is wonderfully acute, as likewise their sight and knowledge of direction. The latter they never seem to lose, and after passing the most complicated turnings of the river I have at night often asked them in which direction their home lay when we were hundreds of miles distant from it, and they almost always, without hesitation or seeming to reflect, pointed in the right direction, which I verified by a compass. Whilst in Tonantins, on the stream of the same name, nearly a mile from the main river Solimóens, some Piojés who were with us by ear used to announce when a steamer was about to arrive fully an hour before she came in sight, and half-an-hour or more before we or any of the villagers could possibly detect a sound.

The Piojé language is not agreeable to the ear, like Quichua, Oregon or Tupi, nor easy to catch and repeat. Its sounds are rather harsh, and the vowels generally emitted with a short abrupt guttural expiration; the final one of a word especially is frequently, as it were, cut off suddenly on its way from the throat before it has made its exit through the lips, and without any modification of its emphasis by a gradual decrease of the breath supplied to sound it.

The language is evidently of very difficult acquisition, as amongst all the strangers I have met who have, during many years, associated with these Indians, I have not found one who could understand and much less speak it. Even a Negress who had lived many years at Yasotoaró, where she had picked up the Brazilian "*lengua geral*" and some Quichua from mere casual comers, could not understand Piojé. Their numerals, which are subject to some variation in different villages, go up to ten, but really are composite from six to nine, as may be seen by their designations:—

- | | |
|---------------------|----------------------------|
| 1. Moño. | 6. Tequenatequí. |
| 2. Tsamuncuá. | 7. Tequenatsamuncuá. |
| 3. Tsamunhuentecuá. | 8. Tequenatsamunhuentecuá. |
| 4. Tajesezá. | 9. Tequenatajesezá. |
| 5. Tesserapuí. | 10. Tsëäinyá. |

NOTE: (These numbers and all Indian words and names in this paper are to be pronounced as Spanish).

Although the numerals seem so complicated many other words I was able to collect and note are of the simplest construction as for instance:—

Wild turkey	..	..	..	uji.
peccari	..	..	..	sénsé.
turtle	..	..	..	cóhu.
fowl	..	..	..	cúra.
tiger	..	..	..	ijái.
fire	..	..	..	tóa.
what is the matter	..	..	..	quimamí.
farewell	..	..	..	savé.
beads	..	..	..	yíyó.
axe	..	..	..	súpó.
water	..	..	..	ócó.
wind	..	..	..	tútú.
sun	..	..	..	ensé.
moon	..	..	..	ñáñé.
it is going to rain	..	..	..	ócó rájé.

Their facility for pronouncing and learning other languages is marvellous. I found they could repeat English words after me with an almost perfect accentuation—a test so few foreigners can creditably perform—and they seem to pick up other Indian languages superficially with a most enviable rapidity. After a month in Brazil any one of them understands Portuguese and the “*lengua geral*,” and speaks them fairly. One I knew who could speak seven languages, namely, Spanish, Portuguese, Piojé, Tupi, Quichua, Oregon, and Mouroi, and another one the same number, only in place of the last he had learned San Miguel. It must not be thought that the Indian tongues named are mere dialects; they are all completely and notably distinct. The Spanish of the Piojés is very amusing, and elsewhere I have called it Pigeon-Spanish on account of its peculiar similarity in construction to Pigeon-English. The gerund is used with remarkable frequency, and is in fact almost the only verbal form known to the speakers. The use of the gerund, the pronoun of the second person being always used in the genitive case instead of the nominative, the needless insertion

of "tiene" (has or has got) into every sentence, and the employment of the demonstrative pronoun "that" in place of "this" invariably with the masculine termination, are the main characteristics of this curious language. They are very strict in the observance of the rule that two negatives make an affirmative, and if asked, "Is that not a canoe?" would reply, "No," as a negation to the negative question, but as an affirmation to the existence of the canoe. Again to the question, "That is a canoe, is it not?" the reply "Yes" would mean that it was not one; a confirmation of the negative.

The diseases the Piojés are most subject to are catarrh, small-pox, and a skin disease called by the Spanish South Americans, "Carate." The two first make fearful havoc amongst them at times, and are the greatest and deadliest enemies brought to them by the white man. That small-pox should depopulate districts of human beings living under the conditions that Indians do does not appear extraordinary, but that this should be equally the case with catarrh is likely to convey some astonishment to the mind of the European, who is only too apt to ridicule any gravity being attached to a cold. Like the Piojés of the Napo, whose first salutation to a stranger is "*Huairahué, Huairahué!*" whilst indicating the nose, but in a milder degree these Piojés are much alarmed when anyone appears amongst them with evidences of a cold in the head, for they seem to take the contagion with great facility, and it soon assumes a most virulent form of influenza and high fever which too often results fatally. On my descent of the river the Consacuntí Indians accused me of bringing catarrh to them with my party when passing their place on the upward journey. I denied having done so as none of us were suffering from cold. Two months afterwards I heard from a friend who had visited the same village that nearly all its inhabitants had died from the effects of the colds they had and which they sometimes appear to contract by mere contact with white men. A Cuembí Indian who accompanied me down the river to Santo Antonio on the Solimoes, I left at this place awaiting an opportunity to return to his home. Three weeks later passing by Santo Antonio in a steamer I landed there and found the poor fellow in an almost dying state, with a terrible influenza and high fever. I left him some remedies and injunctions, but fear they came too late for his recovery, and he cannot have lasted long after my departure.

Carate is an hereditary disease, and by some is said to be contagious, but this there is apparently some reason to doubt, and at all events it is not easily passed by mere contact, though under certain conditions it may be, if this be frequent and continuous. Still it is not rare to see a husband "*caratoso*" and

the wife clear skinned, or *vice versâ*. In the mildest form of the disease the skin is merely blotched with dark or black patches, but when severe, the epithelium is black and the epidermis dry, squamous, and rough, the light horny flakes of which are continually being shed.

The Piojés are, like most Indians, usually taciturn and laconic with strangers, especially white men, but amongst themselves often chatty and merry, and if one has their confidence are easily amused with one's conversation as long as this of course is adapted to their understanding. When flagging at their work of wood-cutting, at which I had to employ them extensively, such jokes from me as: "Tuyo no sabiendo leña cortando," (*You don't know how to cut firewood !*), or "Tuyo chacra cortando no sabiendo tiene, mujer no será cojiendo" (*If you do not know how to clear the forest for a plantation, you will not get a wife*), this being the necessary matrimonial accomplishment, would make them all roar and shriek with laughter and greatly reanimate them to more strenuous efforts. Jocular sarcasm they always understood, and would continue exchanging with each other to me incomprehensible witticisms after such a remark of mine to one of them, as for instance: "Tuyo tabaco fumando no queriendo tiene" (*You would not like to smoke a cigar !*)

They are extraordinarily timid and cowardly unless drunk, in which state they sometimes become obstreperous. One night whilst I was staying at Yasotoaro, riotous quarrelling was going on in the house of an Indian named Simon, the most intelligent, hardworking, and generally most enlightened of the village, with two friends of his from Cuembi. For a long time the drunken broil continued, but at last it reached such a pitch that fearing that at any moment there might be bloodshed, we got out of bed and went round to try to quell the riot. The Indians in Simon's house were in such a state of excitement and making such a deafening noise that they would not and could not listen to the "corregidor" who was foremost amongst us, but Simon, when he saw him, began at once to resent the interference by saying, in the most impressive language he could use: "Nosotros blanco no queriendo; ese blanco mucho no bueno tiene" (*We do not want white men; this white man is very much not good*) and at the same time he came forward as if to make an attack. The "corregidor" at once gave him a blow with his fist full on one eye which knocked him down. In a moment all was changed, and the Indians were cowed into their usual taciturn timidity. Most others would not have cared much afterwards for having been knocked down, but poor Simon felt the degradation more deeply than I have ever seen in one of his race. His whole spirit appeared

broken from that moment and the blow he had received had entered into his soul. This unusual sensitiveness doubtless arose in great part in that he had had a good master for some time past, by whom he had been treated with great consideration as had he also been during his service under me. The following days he did not allow himself to be seen, but when I went away he came out to watch the steam launch depart, in which he had spent two months and a half of merry hard work with me. All his lightheartedness had gone and he barely wished me adios. His friends told me he had expressed the firm determination to leave the place of his humiliation and never to return. I felt deeply sorry for him; this show of feeling, however, was most unprecedented, for he and many of his companions had undergone much hard bondage before, under their exacting masters on the Amazon and elsewhere.

Whilst on this subject, I cannot refrain from noting a few words on the system of slavery, for it can be called nothing else, much in vogue on the Solimoes and Marañon, and I cannot consider the subject out of place here, as most of the members of the Piojé villages have had at some time or other, or chronically, to suffer under it.

The general impression amongst us is that the Indian is above all races the most unfettered and freest; that he wanders whither he wills through the boundless forest or over the plains, his only work being to build his hut and cut down the jungle for his plantation; the entire remainder of his physical strength, instinct, and censorial acuteness dedicated to ensuring success in the stealthy war he wages against wild animals and other wilder men. This impression it cannot be denied is mainly correct as far as the most isolated and barbarous tribes are concerned, or in a few cases where the maintenance of a warlike independence has been possible, but as regards the majority of the Indian tribes of tropical South America, best known to us through their having come into contact with white men or pseudo-white men, circumstances are widely different, and woe to the Indian's freedom when once he falls into the civiliser's power.

The method employed to enslave him is to get him into debt by tempting him with raw cotton drill, knife or beads. To clear off this debt he is made to work, but as he seldom, or actually in many cases never, is credited anything for his labour, his debt goes on growing and growing, and the bonds that tie him become firmer and firmer. If he runs away, which he is generally too timid to do, he is punished on his recapture, for the petty authorities in the Brazilian villages are the first to uphold a system which, though unjust, is their only means of procuring labour.

To give an idea of the realness of this slavery, I will relate a case of each sex; the one is respecting a man, a Consacuntí Indian named Juancho, whom I knew well, and whose liberation was effected before me, and the other is about a woman, communicated to me by a trustworthy person who had been in the village where it occurred, as also had I a short time afterwards.

Juancho had been brought down from his native place to Tonantins by a New Granadian Mulatto to settle in the village with his master.

When the expedition which I accompanied was about to set out on the journey to ascend the Putumayo, Mr. Reyes, the originator of the scheme for opening the navigation of that river, endeavoured to get together as many of the Piojé Indians who were in Tonantins as possible, in order to take them back to their homes, and that at the same time they should make themselves useful on the journey. Amongst such Indians, the liberty of a number of whom was bought from their masters, was Juancho, and we found out through the others that he also wished to return to his native place after his many years of enforced absence. We ourselves asked him, and he said he wished to go, so we called his master and told him that we contemplated taking Juancho with us as he was being detained forcibly. Of course at the same time Mr. Reyes offered to make good whatever he might owe his master.

The master, very wroth at such interference, replied that he did not think the Indian wished to go, and in effect upon our again questioning Juancho on the subject before him, no answer but that he wished to stay could be elicited. He was in fact so cowed that he did not dare, even in the midst of us and his fellows, to utter a word that he thought might raise his master's ire, or take a single step for liberty in the presence he feared. Upon investigating the matter further, we finally found that Juancho had been there some years working positively like a horse, with insufficient food, many hard blows, as deep scars upon his person testified, with clothing of rags and a heavy debt of money to his master. All that he had received, less than the necessary clothing, and even the axe with which he chopped wood for his lord to sell, were debited to him, but in compensation for his years of constant labour, nothing had been or probably ever was intended to be credited to the unfortunate as wages.

The other case of a young Indian woman to which I refer was as follows: She had been transferred from her previous master, as is frequently done, by payment of her debt, a trifling sum, and thenceforward had to work for her new master. She had toiled for him some considerable time, as women do toil and

drudge there, and had increased her debt by a few milreis for absolute necessities, when she finally decided to leave him, and indeed effected her purpose. She was brought back, but being possessed of some intelligence, and a sense of the injustice practised upon her, she appealed to the local authorities, and claimed freedom from debt if compensation for her work be set off against it, the work done being far in excess of the amounts she had received. Her claims were all disallowed, and she was forced to return to her master, who be it furthermore remarked had accomplished criminal designs upon her, for which she also demanded some satisfaction and her liberty.

Now I do not wish to assert that all cases are as flagrant as these, but be it how it may, the poor unprotected and apathetic Indian is constantly taken from his home and restrained by unfair means to work for years against his will without any proper compensation; and farther up the Marañon, on the Napo and other rivers, children are still frequently stolen for servants. There must be some glaring injustice that where labour is so scarce and so valuable, a hard-working man or woman does not receive sufficient even to pay for the scant and miserable clothing necessary. Whilst the emancipation of the Negro is progressing in Brazil, the poor Indian still labours under his bonds unnoticed.

Some of the Piojés who have travelled far, and have had the good fortune to return home, use firearms, but their own weapons are "bodoquera" (blow pipe), spear, and lance. The lances are very well made, of six to eight feet in length and tapering from about half-an-inch at the hilt. In the fore end a sharp needle of chonta about two or three inches long, is inserted; this is dipped in poison and breaks off in the flesh of the animal struck. Although the bow-and-arrow is not one of their usual arms of offence they are wonderfully quick in gaining proficiency in its use when on the Solimoens, where turtle catching is only allowed by its means or by harpoon.

The superstitions of the Piojés differ little from those of other tribes in the same tract of country, but some of them are worthy of enumeration, as not only having a hold on their minds, but also on those of some more or less educated white men, who have spent a considerable portion of their lives in the wilds, but on whom one could not imagine such false beliefs could make any impression. One of these, actually practised by a white man of my acquaintance, is that in order to attain proficiency in the use of the bow-and-arrow, and to aim well, the hands should be placed amongst the terrible "Sänba" ants to be bitten by them. Another similar practice which I saw two Piojés indulge in with the same object was when they caught two scorpions one day,

to cut off their sharp stings, the last caudal joint, and scratch their arms severely with them.

Another white man, a New Granadian of considerable intelligence in whose company I spent a long time, together with the Indians, most firmly believed in the efficacy of a vegetable preparation, kept always in an alligator's tooth, for the cure of snake bites ; but the extraordinary part of this is that the faith is not placed in the preparation itself applied to the wound, but in the fact of its being kept in an alligator's tooth, without which it would be looked upon as quite valueless.

Another very curious custom is that of both father and mother fasting for days after the birth of a child. Sometimes this is kept up so long that it is a wonder that at least the mother does not sink under the debilitating ordeal. If the father is away from his wife he also fasts three days on hearing the news that she has borne him a child, as some of the Piojés assured me.

Before concluding this far from exhaustive subject, it is pleasing to me to be able to record that music and art, although most primitive, are not quite unknown to this interesting people. Their music is extracted mostly from a short thin bamboo instrument, called "bobona," with one hole to blow in and one by which the sound is modulated by shaping the hand outside, One man though had a sort of "dulcinea" (a kind of flute-whistle) on which he played the following notes, which I give as their highest development of melody.



The fine arts are known only in the adornment of the person, and painting is restricted generally to the face, but less frequently also to the hands and feet. In painting the face great care is bestowed to make the lines on both sides symmetrical, and these delineations sometimes approximately trace the natural furrows on the forehead and around the eyes and mouth. Upon my offering to embellish a Piojé with the brush, and the red paint which they always carry with them, he at once acquiesced, and submitted most seriously to my roughly sketching a sort of death's head on each cheek and a laughing face on his nose. He did not wash it off for days.

VOCABULARY of the ZAPARO LANGUAGE.

Compiled by A. SIMSON, Esq.

NOTE.—*Pronunciation as in Spanish.*

One	Nucuáqui.
two	anámishináqui.
three	ainucuraqué.
four .. .	manucuaquicuaajuótsa (Supinu)
	or huetsaramajáitiaca (Yasuni).
five	mánucua (<i>See Foot</i>).
above five, many ..	mánunu.
Man	Táúcuo.
woman	itiúmu, pl. itiumuéra.
son	niáno.
father	cúmanu.
mother	mamajá.
sister	cuíña.
brother	cuánana.
medicine man.. ..	shimáno.
devil	samáro.
friend	yanása.
husband	quiráno.
companion	ároco.
savages (aucas) ..	mehuáno.
partridge (small species) ..	neguá.
wild turkey (pava) ..	catsagüíña,
curassow bird (piuri) ..	camarána.
” ” (pauji) ..	piócua.
trumpeter ” ..	matsácu.
mangoe (oriole) ..	mucútso.
crow (shira) ..	tsicséca.
turkey buzzard ..	amúcuá.
domestic fowl ..	ataguarítui.
eggs	ícucua.
birds (in general) ..	pisháca.
macaw	surá.
jaguar	imatíni.
tapir	yasúcuá.
capibara	acáíya.
fish	maráishi.
pecarri (smaller species) ..	cáshi.
” (larger “) ..	yári.

agouti	täurijia.
deer	niquéro.
dog (domestic)	ariócu.
„ of the woods (perro del monte)	piñocua.
turtle	yaurícha.
snake	cóno.
tarantula spider	cononáca.
monkey (Simia caraya, Hum)	patócu (compare ucan).
„ (Machin)	cuatéco.
„ (Myctes palliatus, Gr. ?)	tsitsócu.
„ (Simia seniculus Linn.)	aritiócuca.
„ (S. paniscus, Linn.) ..	áitio.
„ (S. sciurea, Linn.) ..	quiócu.
„ (Chichico)	ítseca.
The forest	nácu.
fire	anamishúcu.
water	murícha.
sun	yanócu.
moon	cashícu.
heavens	níacöuhira.
earth	rapáca.
rainbow	hüiatche.
light (fire)	nuntána.
firewood	aishócu.
salt	ichóju.
charcoal	unishíac.
ashes	unámujua.
rain	humáro.
wind	párató.
sandbank, beach	ayóju.
tree	nacúna.
log	hámaca.
snag (in the river)	aguána.
leaf	juéca.
tobacco	jaunéca.
pimiento (capsicum)	anacúcu.
thorn	ijióto.
wax	tupáca.
maize	säuco.
cassava (yuca)	múe.
plantain	pujióca.
poison (for darts)	numánaca.
clothing (cotton cloth) ..	shíro.

chicha	casúma.
paddle	táquiotaca.
punting pole	caráhuana.
canoe	yára.
gun	imacána.
knife	sapúcuá.
axe	cajícua.
lance	acachíne.
pot (earthen saucepan) ..	cóushima.
bowl (calabash) ..	samarico.
fan (for the fire) ..	apítio.
food, victuals ..	atsactsáca.
broth, gravy	nacuácone.
blow-gun	numanúcuá.
head	ánaca.
eyes	namíjia.
hand	ichiosú.
arm	curamáso.
nose	najúcua.
mouth	atupáma.
foot	ĩnocuá (<i>see</i> 5).
leg	ĩnacu.
fingers	cansúa.
calf (of leg)	tanúmaco.
hair	naquésó.
lips	yatsócue.
seat	tapuáco.
belly	tahuáca.
entrails	maráca.
blood	nanáca.
skin	puetsócue.
soul, spirit	tsóhuano.
Where	taíte.
here	aní (<i>see</i> Near).
there	áti.
far	taícua (<i>see</i> No).
near	aníti (<i>see</i> ucere).
yes	ingyá.
no	áítia, taicuá (<i>see</i> far).
small	nichacáqui.
high, tall	nauco.
large	queráitio.
heavy	ĩnáca.
light	suáca.
how many, how much ..	tiáiqui.
early (in the morning) ..	taricágue.

I	..	..	..	cuí.
thou, you	..	..	..	chá.
my, mine (prefix)	..	..	..	cu.
he	..	..	..	no.
they	..	..	..	notena.
(plural termination)	..	..	..	(cu, era).
hard, with strength				anajicha.
hard, dense	..	..	..	tocúru.
thin	..	..	..	másecu.
fat, stout	..	..	..	cúero.
fat, greasy			..	tsutúáno.
idle, lazy	..	..	..	secáno.
in love	..		..	míocuashianó.
bad	..	..	..	cóshicha, sacushíno.
stingy, mean	..	..	..	jumuitúcu.
red	..	..	..	natúcu.
to-morrow	..	..	..	tariqué.
I go, I am a going	..	..	..	cuicuáraja.
Go with me, let us go			..	páicuámaja.
Come	..	..	..	ánima.
Come thou (imper.)	..	..	..	chananíma.
He comes	..	..	..	nonaníma.
Let us go into the forest	..	..	..	icuá nacujiña.
no, there are none (negative).	..	..	..	taicuá.
to eat	..	..	..	chatsácu.
eat thou (imper.)	..	..	..	chatsá.
give me	..	..	..	chacuiño.
bring me	..	..	..	tiantíama.
thou shalt bring	..	..	..	chañantiáma.
tie up (imper.)	..	..	..	chamaró.
twist „ (of rope)	..	..	..	chanucusóni.
paddle „	..	..	..	chataquíó.
drink „	..	..	..	charatú.
where are you going?	..	..	..	tai cha táicuáca.
go thou (imper.)	..	..	..	cha-naicuáma.
what is it?	..	..	..	catsacá.
what is this?	..	..	..	catsacáte.
what pains you	..	..	..	catsacáte quíranu cuícha.
what are you looking for?	..	..	..	catsacáno.
call him, call thou (imper.)	..	..	..	cha-píño.
he calls you	..	..	..	no piñocuche.
he calls us	..	..	..	no piñocúpue.
it must be they, these are the				
ones.	..	..	..	nucujatèna-iquícha.
bad chicha	..	..	..	socoshícha casúma.

NOTE by Mr. HYDE CLARKE on the ZAPARO VOCABULARY.

THE foregoing vocabulary is an addition to our knowledge, being independent of that of Osculati.

The only South American language appearing to me to be allied to the Zaparo is the Iquito.

That the Zaparo is, like all other American languages, allied to those of the Old World, appears by a comparison with the Gurma and Guresa of Africa and some other languages.

	Zaparo.		
Tapir ..	yasucua ..	..	ndshogo, <i>Orungu</i> , &c.
(Elephant)			
Jaguar ..	instini ..	..	(muticst, kamutera, muti- mu, <i>Guresa</i>).
Egg ..	icu, icucua ..	..	akud, <i>Koama</i> , &c.
Parrot ..	sura ..	..	kiara, <i>Guresa</i> , &c.
Knife ..	sapucua ..	..	sippo <i>Gshantee</i> .
	(sipah Catawba Namer.)		
Pot, Bowl ..	samarico ..	..	samanera, <i>Guresa</i> .
Eye ..	nami, namijia ..	..	namu <i>Gurma</i> .

The corresponding forms for knife will be found in my paper on weapon names in the Journal.

The above are not the only evidences that a casual survey has shown, but there are many words. [One matter also deserving of observation is that the affinities of Zaparo are to be found in Africa among those languages of early culture, from which proceeded the Akkad of Babylonia, the Lydian, Phrygian, &c., the Etruscan, and the present Ugrian and Japanese, as well as the Ponio of North America.]

ANTHROPOLOGICAL MISCELLANEA.

A MODERN CHINESE VIEW ON HEREDITY AND EDUCATION.

(Translated by Lavington Oreenham, from the Chinese Original.)

Man received his form from the conjunction of the primeval 氣 essence of Heaven and Earth. All space possesses this essence and is filled with objects. Man is made from the purest (正) portion of this essence; the various other things from the inferior portions, which, scattered about at random, make various combinations from which are developed the mammiferous, oviparous and other classes of animals, man still remaining the one spiritual creation. Men being thus alike, we are unable to explain why the children of scholars and high officers are in the majority of cases so extraordinarily intelligent, whilst the children of agriculturists are even up to extreme old age, loutish and common-place. Place men of the two classes before you, and the difference will be at once discernible, and on entering their houses you will mark the same distinction between the parents. Thus we find the essence primeval cannot be altogether pure. If it be turbid, the form is heavy; if pure, then light; this is how men become either intelligent or stupid. Scholars, by heredity, are always brilliant and clever, and attain to perfection in their studies with ease; but an agricultural family, attempting to change its mode of life and study, never gains renown. Thus a way is shown by which men of talent can be plucked out from the mass. Men from the North are honest, heavy, rough, outspoken fellows; but from the South they are brighter and more intelligent, more refined and ingenious. Nevertheless, brightness or dulness cannot be said to depend wholly on locality. Brilliant men, easy to teach, are numerous in the North; whilst foolish, ignorant blunderers are not few in the South; and to choose men solely from their physiognomy would be to make mistakes. In Anhui, a beggar woman has taught her dog to beg for her, and it enters houses and sits up asking alms—and are not dogs brutish? Travelling conjurors carry about monkeys which they dress up as men, and if an insufficient amount of cash is given, the animals refuse to perform—and are not monkeys brutish? Dogs answer to a certain call, cats to another, and bamboo fowls can understand signs, and are not they all brutish?

These animals are created from the scattered and inferior portions of the primeval essence. How is it then that man, created from the conjunction of the purest essence of Heaven and Earth, is so often found to be utterly incapable of instruction! In antiquity, men were classed as superior men and as rustics, not because they differed in birth, but because their work and duties were dissimilar. Were this not so, how could the statement of man's nature being originally good have originated; or the further one, that some men are born good, but others require instruction to make them so? Still we do not affirm high and learned families always have excellent sons. At times may be seen a young gentleman with hair jet black and glossy enough to serve as a mirror, with white skin, pencil eyebrows, and intelligent eyes. Their fathers are deeply read, or of ancient family; their mothers, too, are well descended or have married when young; there is no lack of money for the young hopeful; his dress and *distingué* appearance make him eminent in a crowd; teachers are obtained for him, fathers watch over him, and neither trouble nor expense are spared. Yet when brought out he is found destitute of any trace of learning, is unable to reply when questioned, and goes about as if he neither saw nor heard anything. On the other hand, there is the villager who digs and delves for his living, who has not among his kindred one learned man, and who has to obtain instruction from some croning old teacher. In his own locality he soon becomes famous, and is regarded as a semi-inspired, and is advised by his family to devote himself exclusively to study. After some years he may then gain a name, may become illustrious as an official, or celebrated as a scholar, but he still resembles in look a herdsman or duck driver, with hair dishevelled, yellow face, dark skin and a clownish lumping gait, just like his ancestors. Is not this quite unexpected and strange? The present heterodoxies and extravagances arise solely from lack of instruction, without which errors can never be amended. Rich or learned men all have the younger members of their families taught, and completely, or at least apparently. But villagers are unwilling to instruct them, so completeness is not attained even in appearance. The instruction of the holy men was never designed for only one class, but it is extinct—the name, not the reality, surviving. Hence the spread of heterodoxy! instruction is not searching, and so men doubt, bad men seduce them away, and the people sink more deeply than ever. If antiquity had come down to our time with its allotment system, its schools, its feasts, its archery, and its study, then superiors would have been acquainted with ceremony and poetry, and villagers would have respected their princes and elders. If it be said that only the eminent can be instructed, and that the foolish are incapable of it, how was it heterodoxy never existed at the time of the three dynasties? To come down to our present times, every locality has its local officials, high and low, to whom all things revert, who are responsible for everything, their ordinances are searching and severe, as manifested in the Ch'ü-shan riots and elsewhere, or in the miracle-mongers at

Nanking, or the impostor Wang in Kwang-tung—all village busy-bodies and foolish. If it be argued these people are too stupid to be taught, or to be worth teaching, whence comes their audacity, their temerity in treasuring up grudges and acting with such recklessness? If they are stupid villagers incapable of instruction, why do they listen where they should not, and stoutly believe and show earnest conviction? Thus turbid heavy primeval essence produces both foolish and intelligent. Those whom instruction cannot reach, if strong, become rebels; if weak, turn to magic and scepticism; those, too, who have not broken law, but are punished, though uninstructed, for slight faults, are treated improperly. Yet these foolish unteachable people are moved to tears at the sight of acts of loyalty, filial piety, chastity, or righteousness, at theatricals or shows; often, too, they chat in arbours and tents about ancient and modern times, whilst an elder, seated in the place of honour, is surrounded by listeners to his never-failing stories of past dynasties with their fortunes and mishaps, their ruins and their retributions, and these foolish people again are moved and touched by such things; there is, too, the old man with the wooden clapper, who calls at the door on his mission (of story telling). Such means as these officials and gentry can use to instruct. But instruction is not used, but punishment; and hard then does it become to prevent rebellions, heterodoxies and suspicions. For our part, however, we should be best satisfied if Heaven and Earth would produce only the pure and light essence, and education be dispensed with altogether.

THE JOURNAL
OF THE
ANTHROPOLOGICAL INSTITUTE
OF
GREAT BRITAIN AND IRELAND.

JUNE 11TH, 1878.

JOHN EVANS, Esq., D.C.L., F.R.S., *President, in the Chair.*

The minutes of the previous meeting were read and confirmed.

The following presents were announced, and thanks were ordered to be returned to the respective donors for the same:—

FOR THE LIBRARY.

From the INSTITUTION.—Journal of the Royal United Service Institution. Vol. XXII, No. 95. Appendix ditto to Vol. XXI.

From the AUTHOR.—Kraniometrische Mittheilungen. By Dr. Moriz Benedikt.

From the BOARD.—9th Annual Report of the State Board of Health of Massachusetts.

From the SOCIETY.—Bulletin de la Société Impériale des Naturalistes de Moscow. No. 4, 1878.

From Sir JOHN LUBBOCK, Bart., M.P.—The Cape Monthly Magazine for May, 1878.

From the EDITOR.—Revue Scientifique. Nos. 48 and 49, 1878.

From the EDITOR.—Revue Internationale des Sciences, Nos. 22 and 23, 1878.

From the EDITOR.—“Nature” (to date).

The following paper was read:—

On the BULGARIANS. By JOHN BEDDOE, M.D., F.R.S.

THE general interest felt just now in the ethnology of the Balkan peninsula must be my apology for a slight and imperfect paper, based partially on observations of my own, but chiefly on the elaborate papers of Kopernicki and Virchow, on the Bulgarian skull-form.

Nowhere in Europe, perhaps, are race-questions of more interest and importance than in Turkey; but notwithstanding much labour bestowed upon the subject, the anthropology of the Balkan peninsula remains to a great extent obscure. National antipathies, religious and linguistic differences, are strongly marked: blending of races by marriage and community of life-interests goes on very slowly, yet nevertheless even the numbers and boundaries of the several existing races are but imperfectly known. Boundaries, indeed; are in many cases quite undefined: thus it is impossible, in the Eastern half of the peninsula, to separate geographically the Bulgarians, Turks, Greeks, and Tartars; and the peculiarly atrocious and destructive character of the present war depends in part upon the dwelling together, in the same or in contiguous villages, of people who are or regard themselves as being of strongly contrasted nationality.

Moreover, our ignorance of the ethnological position of the earliest historical inhabitants is very profound. We may, indeed, pretty safely set down the modern Skipetar, Arnauts, or Albanians, as lineal descendants of the Illyrians and Macedonians. But what sort of people the Thracians were, ethnologically, is quite unknown. We can hardly suppose, however, that even the almost incessant wars and ravages which have torn and desolated the peninsula, but which have spared a remnant of the Macedonians, have been able to extirpate the blood of the Thracians; that the people of Hæmus and Rhodope were utterly destroyed, while those of Pindus were able to preserve their individual nationality. Colonel James Baker mentions a peculiar tribe in Rhodope called the Erghné, supposed to represent the ancient Agrianes, a Thracian tribe; they might well repay investigation, and we might possibly even learn something thereby respecting the old Thracian physical type.

The prevailing race of the northern, north-western, central, and north-eastern parts of the peninsula, passes for Slavonic; and Slavonic it is in the most important point of language, which almost necessarily entails a certain common likeness as to politics and religion. But the Anthropologist desires to

look further, and to know something of the tribal differences of physical and moral character, and of ethnic descent. The true Slavs appear to have spread within the historical period, from a pretty large but still comparatively limited area in Eastern Europe, lying about the Carpathians and the Dnieper, northwards, southwards, eastwards, and westwards; and they retain to a great extent, wherever they have gone, the same physical characteristics. From Procopius's description, their ancestors would appear to have been strong men of good stature and fair complexion, but not so remarkable in these respects as the genuine Gothic race; as compared with whom they were evidently deficient in military qualities. Agricultural and pacific in their habits, as invaders they were remarkable for their ferocity and cruelty. The kind of volatile good humour which is consistent with, and passes suddenly and almost causelessly, into extreme savagery, and which is attributed now-a-days to the Cossacks, appears to have characterised the ancient Slavs; and the tortures and massacres which heralded their permanent settlement south of the Danube, may in part account for the fact that we find their own type predominating there to so great an extent: they generally exterminated or extirpated the prior inhabitants, whereas the Goths or Germans more often established themselves as a ruling caste.

Intellectually, they are capable, but lack steadiness, and perhaps require some admixture of alien blood, as in the case of the Bohemian Czechs, before they can achieve great things. Their cranial development is fine; and this brings me to the subject of their physical character. They are men of good stature, and moderately fair complexions. The Servians and Bosnians are tall, fine, square-built men. So far as I have seen or heard, blue or grey eyes and brown hair predominate over darker hues, and I have seen flaxen hair even among the Bulgarians, who are generally a darker race. It is said that as one proceeds farther south, in Servia, Bosnia, and Herzegovina, darker hues become prevalent, perhaps from the larger proportion of Illyrian or Wallachian blood. The form of the head resembles that of the northern Slavs: it is broad in all its dimensions, and I should call it elliptical, or even oblong, rather than oval—an oblong rounded at the corners. The most common form of face corresponds with that of the skull, and has a tendency to squareness. It is not prognathous, nor are the zygomatica broad in relation to the frontal region.

Now it is remarkable that though the Bulgarians speak a Slavonic tongue, with little or no Turanian element except what may reasonably be supposed, or positively known, to have been introduced by the O-manli Turks, the description just

given does not generally apply to them. We know that the original Bulgarians, the original bearers of the name, were a tribe from the Volga region, whose name occurs in connection with those of the Huns and the Avars, with whom they seem to have had much in common, and who have always been considered as of Turkish or Finnish, or of mixed Turkish and Finnish blood, like the Hungarians. As the Avars, and subsequently the Magyars, ruled over the Slavs of Hungary, so did the Bulgars dominate the Slavs of the Lower Danube, standing to them apparently in the relation of a ruling caste. Ultimately the two elements, the Bulgar and the Slav, became welded into one, the speech of which was and remained Slavonic, and Slavonic of an older and less developed type than the Servian of to-day. Now it is extremely unlikely that a ruling caste race would have adopted the language of a subject one, unless either: 1st, it was much inferior in numbers; or, 2nd, in civilisation, or unless, 3rd, as Virchow suggests, it received a new religion with the language. The last supposition seems on the whole most probable: for we know that the Bulgarians received Christianity from Servian Apostles.

I have said, on the authority of Kopernicki and Virchow, who base their opinions on eleven skulls collected from various parts of Bulgaria by Kopernicki, and five by Scheiber, that the Bulgarian skull and face differs much from the Slavonic type. What is still more extraordinary is that they resemble neither the ordinary Finnish nor, still more certainly, the ordinary Turkish type. As Kopernicki says, they are neither Finno-Turkish, nor Slavish, but skulls *sui generis* and altogether peculiar. Virchow adds that there are points in which some of these skulls remind one, if of any others, of negro or rather perhaps of Australian skulls; for some of them have a degree of prognathousness unknown in Europe, and a depression at the root of the nose, a subglabellar depression or nasal notch, which we must go to Australia or to Melanesia to find paralleled.

By the kindness of Dr. Barnard Davis, who placed his rich collection at my service, I was able to see and measure a Bulgarian cranium and the cast of another (both originally from Kopernicki's collection); and to compare them with divers Slavish, Rumanian, Turkish, and Esthonian skulls. The cranium is thought by Kopernicki to represent fairly what he calls the type, as distinguished from the mixed type, which by somewhat greater breadth and a shading off of its peculiarities, indicates the admixture of Slavonic blood. The cast seems to have been taken from a skull which was afterwards presented by Kopernicki to Virchow, and became the principal text of the elaborate paper of that illustrious anthropologist.

TABLE of Measurements of Skulls in Dr. Barnard Davis's Collection.

—	Greatest Length.	Greatest Breadth.	Height from anterior edge of Foramen.	Least Frontal Breadth.	Zygomat. Breadth.	Height posterior edge of Foramen.	Index Breadth.	Index Height.	Index height (posterior).	—
Bulgarian male, 28 ad., from Rustchuk ..	7·	5·4	5·1	3·75	5·15	5·25	77·	72·8	75·	Phænozygous
Bulgarian from Bucharest (east) ..	7·5	5·9	5·5	4·	5·5	5·9	78·6	73·3	78·6	Phænoz
Russiaki (Galicz) ..	7·	5·8	5·6	4·1	5·	5·65	82·8	80·	80·6	Aphænoz
Slovak (Neutro) ..	6·9	5·75	5·05	3·8	5·35	5·15	83·3	73·2	74·6	Phænozygous
Croat ..	7·	6·	5·5	3·8	5·6	5·6	85·7	78·5	80·	Aphænoz.
Turk (Sulina) ..	7·	5·8	5·4	4·	5·2	5·6	82·8	77·1	80·	Aphænoz.
Esthonian ..	7·5	5·6	5·4	4·1	5·4	5·7	74·6	72·	76·	Phænoz ?

Scheiber's Bulgarian skulls: Br. Index, 80·1. Ht. Index, 78·9. Kopernicki, pure, 75·8, 78·1; mixed, 78·7, 77·3

Points most notable are the sloping away above and to some extent laterally of the forehead; the comparative elevation of posterior part of skull, so that the highest part is far abait the sagittal suture, the larger portion of skull behind foramen magnum. The Esthonian has this last point, but not the others, the upper part of the forehead in the Esthonian being well developed.

Virchow's four points from meatus in BF skulls.

Bulgarian	103	106	110	117	Russiaki	105	107	105	117	Turk	95	97	102	Czech	100	98	105	130
	97	106	112		Slovak	98	98	100	117	Esthonian	98	102	116	125	Polish Jew	96	103	105 ?

PROPORTIONS, *measured from Meatus Auditorius, and reduced to Percentages, on Virchow's Plan.*

—					To Nasal Notch.	To Spine of Maxilla.	To Alveolar Border.	Chin.
Bulgarian	..	..	..	.. (cast)	100	109	115·5	
Do.	..	..	..	.. (skull)	100	103	107	114·5
Turk	..	..	..	.. "	100	102	107	
Esthonian	..	..	..	.. "	100	104	108	127·5
Polish Jew	..	..	..	.. "	100	107	109	
Czech	..	..	..	.. "	100	98	105	130
Slovak	..	..	..	.. "	100	100	102	119
Russniak	..	..	..	.. "	100	102	100	112

To begin with the cranium—It has the following principal characteristics, all of which are considered by Kopernicki to belong to the type:—cylindrical form, moderate breadth (77), small frontal region sloping away rapidly above and to some extent also laterally, absence of frontal and parietal bosses, large occipital region, comparative elevation of posterior part of skull so that the highest part is far abaft the coronal suture. Observe, not one of these points is Slavonic. The narrowness of the forehead permits the zygomata to be visible when looked at from above, but there is not the same long flat-sided temporal region which is so common in the Irish and other British Celts. The nasal notch is deep, but not very conspicuously so, and the nose may have been well-formed. There is a moderate degree of alveolar prominence: the face is undoubtedly prognathous, but not markedly so; sufficiently so, that is, to distinguish it from a Russniak, Slovak, Czech, or Croat skull, but not to raise the least doubt of its being European.

The cast, however, is much more extraordinary in aspect; it has something of the savage, as Virchow expresses it. It is taken from a large dolichous skull; and exhibits the characteristic points of the other just described, some of them in a more marked degree. The posterior elevation is greater, the prominence of the upper jaw and alveolar border is something extraordinary in a European. The chin is absent from the cast, but is stated by Virchow to be very prominent. But the most remarkable thing is the depth of the nasal notch, and the form of the nasal bones, which start out quite horizontally, and indicate a patulous nose, tilted upwards to an extraordinary degree. This is the special feature that reminds Professor Virchow of Australian or Melanesian forms. Doubtless it is very exceptional even in Bulgaria: still, it would seem to be an

exaggeration only of a feature common there, if not positively typical.

Now what shall we say of Kopernicki's skull type, supposing it to be really the predominant one among the Bulgarians, which, in the defect of evidence to the contrary, we may assume it to be?

The deformity of the nose, which attains such portentous proportions in the cast just now described, does occur in a less degree even among pretty pure Slavs, such as the Poles. We all know the short snub nose of the gallant Pole, Kosciusko, and I don't think John Sobieski's was much handsomer. Among some Cossack tribes patulous uptilted noses are common; but the term Cossack is scarcely ethnological: some Cossacks are pure Slavs, others are Finnish or Tartar. The Cossacks of the Bulgarian coast, who are descended from non-conformists who fled from Russia to escape religious tyranny, and found an asylum under the Turks, are men of splendid physical development, with rather handsome features.

The skull form, however, must be traced, in the main, either to the pre-Bulgar inhabitants of Mesia and Thrace, or to the true original Bulgars. The former hypothesis is not very probable. It is true that the lowest or aboriginal stratum of a population is now known to be often the most persistent, those subsequently deposited being, to use geological language, more liable to erosion. But the extinction of the Thracian tongue, the fact that the Roumans, Wallachs, or Zinzars, who would be almost equally likely to retain some Thracian blood, exhibit a totally different type, and the general course of the history, so far as we know it, makes it unlikely that the Thracian type survives in force, unless in the recesses of Mount Rhodope.

We fall back, therefore, on the true Bulgars, the Turanian invaders who came from the region of the Volga, and who following or accompanying their Slavonic subjects or allies, occupied lower Mesia and parts of Thrace and Macedonia. If these Bulgars had been a Turkish tribe, we may suppose that they would have had the globular acrocephalic skull-form, with small occipital development, which characterises, I believe, all true Turks. But if they were Finns, or Finns under Turkish leaders, the difficulty would not be so insuperable—though the Finlanders are short-headed, the Esthonians are long-headed, and, for aught I know, the Mordwins, Cheremisses, and other Eastern Ugrians may be the same. The absence of frontal and parietal bosses, and the extreme lowness of the forehead, are not to be found in the Esthonians, so far as I know; but certainly these distinctions do not seem so absolutely to negative a Ugrian hypothesis, as the reasons I have given negative

a Slavic or Turkish one. My conjecture is, then, that this skull type is in the main Ugrian, and that the modern Bulgarians are at least as much Ugrian as anything else.

I have said that light colours of hair occur among them. But darker tints prevail; and my very small experience agrees with the extensive observation of Kopernicki, that the light hair is found in individuals of tall stature and more Slavonic aspect.

The *physique* of the Bulgarians is a difficult and obscure subject: their *morale* presents its own difficulties.

They differ from the Serbs in some points favourably; in more, perhaps, unfavourably; and though some of the worst faults are doubtless what naturally arise in a race which for hundreds of years has been subjected to another, they cannot all have originated in that way.

The heroic type, which appears among the Serbs, whether they be Mussulman, Rayah, or free Christian, and culminates in the splendid barbarians of the Montenegro, is absent here. The ballads and popular songs of a people may generally be taken in evidence to the ideal, and therefore in some degree to the character of that people. The Robin Hood of England, the Cuchullin or Diarmid of Ireland, the Cid Rodrigo of Spain, the Reduan of the Moors, the Antar of the Arabs, the Czar Lazarus of Servia, have all more or less of chivalry in their composition, and are not mere embodiments of force, like Marco the Bulgarian hero, who is represented as a ferocious brute, a murderer of women, and a traitor. Their religion, too, rises little above fetishism, and has little connection with morality. Manliness, generosity, truthfulness and respect for women, are scarcely to be expected of such a people. But industry is there, and ambition, industry and acquisitiveness to a degree not found among the Serbs; and the desire of knowledge is there, and the capacity to learn; and but for the forcible interference of Russia, and the vast amount of moral and physical evil brought about thereby, they might gradually, under an improving Government, have developed into better things than we can now expect to see in our own days.

DISCUSSION.

Dr. SEBASTIAN EVANS called attention to the fact that few nations had suffered more severely from the attacks of their neighbours than the Bulgarians. Basil II, Emperor of Constantinople, at the beginning of the eleventh century, had not only earned the title of Bulgaroktonos by his slaughter of an immense number of the male population, but had planted settlements of other races in their midst, whilst the incursions of other peoples from the North had

no doubt tended to infuse a further admixture of foreign blood. This circumstance would account for the occurrence of almost any type of skull among the Bulgarians, and materially increase the difficulty of determining the normal type.

Dr. BEDDOE, referring to the remarks of Dr. Sebastian Evans, said he did not think even the massacres of that most Christian Emperor, Basil, the Bulgarian slayer, could have materially altered or confused the physical type of the Bulgarians; the original stock would soon reassert itself. Though he had himself seen only one skull and one cast, that single skull was considered by Kopernichi to represent fairly the type of the eleven he had collected from different districts in Bulgaria, and Scheiber's five were said to be on the whole very similar. The custom in the Levant of keeping the head covered was adverse to craniological observations on the living, and he should not have supposed the Bulgarians he saw there to be so dolichocephalic as measurement showed them to be. In answer to Mr. Lewis, he had described the prevailing Slavonic form of head in the paper; it was usually rather short and broad, and elliptic or oblong rather than ovate. It was well figured in Fitzinger's excellent monograph on Avar skulls. The Slavs, where least mixed in blood, were a rather fair race, with hair varying from flaxen to deep brown; and he had seen some tall fair-haired Bulgars whom he could not have distinguished from Serbs. Prof. Virchow was now expecting a number of Bulgarian skulls, the material being only too plentiful just at present, and probably he would soon throw further light on the subject.

The following paper was also read.

ETHNOLOGICAL HINTS *afforded by the STIMULANTS in use among SAVAGES and among the ANCIENTS.* By A. W. BUCKLAND.

LAST year I had the honour of laying before the British Association and this Society my views with regard to the origin and development of agriculture, and that inquiry led me naturally to the consideration of those stimulants and fermented beverages in use in very ancient times, and still made and consumed by tribes in a very low stage of civilisation; for if we glance round upon races uninfluenced by European civilisation, we shall find that all, with the exception perhaps of two or three of the very lowest in the scale of humanity, have found means of manufacturing some sort of stimulating drink, or have discovered among the herbs or trees of their native land some leaf or root or fruit possessing stimulating and invigorating properties, capable of sustaining their strength, and increasing their courage in time of need. The doctors of civilised Europe have been indebted to rude aborigines for many valuable medicinal

discoveries, the importance of which can hardly be over-estimated; the invaluable Peruvian bark is too well known to require notice here, but the rude Australian aborigines have recently brought a new stimulant to the notice of the medical profession, which according to the reports given, seems likely to rival quinine in the future. This is the *Pitbury* (*Duboisia*) a plant chewed by the natives to give them strength and courage, the chewed portion being afterwards applied as a plaster behind the ear in order to increase the effect.*

Then we get the coca leaf of South America, eaten to increase strength and endurance,† and the Guarie leaf in South Africa, but these and many more rank rather as stimulating medicines than as *stimulants*, which term is commonly applied primarily to those fermented beverages which possess more or less an intoxicating property; nevertheless the use of these simple medicinal stimulants would seem to be the first instinctive effort of the savage towards supplying himself with something more than mere food, which although nauseous perhaps to the taste, he has found to produce an agreeable exhilaration, and an increase of strength and courage. The lower races do not appear to have gone beyond this, which is in truth only an animal instinct, since many animals resort to special plants for relief in case of sickness or wounds, which they do not habitually take as food; but no sooner do we find a knowledge of agriculture acquired by a race, than we also find them beginning to make and to use fermented liquors. Where the agricultural skill is of that imperfect and primitive type which consists in the cultivation of roots and fruits only, these fermented drinks are commonly mild in character, and composed of roots or herbs prepared in a peculiar manner; but wherever the cereals are cultivated, we generally find a sort of beer prepared from the principal cereal, and forming the chief beverage of the people,

* *Australian Plants*.—Baron Mueller has given, in an *Australian medical journal*, an account of his examination recently of the leaves of the "*Pitbury*," said to be of marvellous power as a stimulant, and to be found growing in desert scrubs from the Darling River and Barcoo to West Australia. He is of opinion that it is derived from the "*Duboisia Hopwoodii*," described by him in 1861, the leaves of which are chewed by the natives of Central Australia to invigorate themselves during long foot journeys through deserts. The blacks, he says, use the *Duboisia* to excite their courage in warfare; a large dose infuriates them. The "*Sydney Herald*" is informed also that some dry leaves and small stems, said to come from far beyond the Barcoo country, and called "*pitcherine*," are used by the aborigines as we use tobacco, for both chewing and smoking, and it is stated that a small quantity causes agreeable exhilaration, prolonged use resulting in intense excitement. It is observed that the blacks, after chewing the leaves, plaster the plug formed by so doing behind the ears, as they believe the effect is intensified thereby. See "*Colonies*," June 9th, 1876.

† The coca would seem to be as pernicious in its effects as opium when indulged in to excess

whilst fruit wines form the luxury of the rich, and infusions of plants and herbs unfermented, continue to be used as agreeable and refreshing or medicinal beverages. The great antiquity to which cereal agriculture can be traced, would naturally cause us to ascribe an almost equal antiquity to the manufacture of some sort of beer; and we find indeed that the ancient Egyptians, who excelled in agriculture, were also celebrated for a beer or barley wine, extolled by the Greek poets and historians under the name of *zythus*. Wilkinson tells us that "Diodorus though wholly unaccustomed to it, and a native of a wine-growing country, affirms that it was scarcely inferior to the juice of the grape," and Athenæus says it was very strong and had so exhilarating an effect on the drinkers that they danced and sang and committed the same excesses as those who were intoxicated with the strongest wines. The manner in which this ancient beer was prepared is unknown, but from the testimony of Greek writers, Wilkinson thinks it must have been greatly superior to the beer or *boozā* of modern Egypt, of which he says, "the secret of preparing it from barley has remained from ancient times, but indolence having banished the trouble of adding other ingredients, they are contented with the results of simple fermentation; and bread and all similar substances which are found to undergo that process, are now employed by the Egyptians almost indifferently in making *boozā*."* We may reasonably conclude that the barley employed in making the Egyptian *zythus* underwent some process analogous to malting, since we find that process employed by African races in the present day; but it seems certain that they knew nothing of hops, and Wilkinson says "they were obliged to have recourse to other plants, in order to give it a grateful flavour, and the lupin, the skerret, and the root of an Assyrian plant were used by them for that purpose."†

This mention of an Assyrian plant leads us to infer that the beer of Egypt was known also in Assyria, whilst the knowledge of Egyptian wheat and barley among the Swiss lake-dwellers, probably points to the extension of beer-making into Europe, and to the route by which it reached our shores. But in vine-growing districts, beer was quickly resigned in favour of the luscious juice of the grape, although probably retained among the peasantry, as at present.

Wilkinson gives us a passage from Æschylus—

"You shall be met by men whose lively blood
Dull draughts of barley-wine have never clogged"—

* Wilkinson's "Ancient Egyptians," Vol. ii, p. 171.

† *Erbd.*

to prove that the Greeks held beer in contempt, but it is also a proof that it was not unknown to them, and was probably the common drink of the lower classes.

Turning to the far East, we find a beer in use in China, in very ancient times, and still drunk there, made, not from barley, but from a peculiar kind of rice. The invention of this beer is assigned to the reign of the first emperor of the first dynasty, whose date is reckoned at B.C. 2217. The inventor's name (Y-tie) is given by Du Halde, who adds, "The emperor, when he had tasted it, said: 'This liquor will cause great troubles in the empire.' He banished the inventor, and forbade the manufacture, but the precaution was useless, the secret of the manufacture was preserved, and it still forms one of the delights of the Chinese."* The mode of preparing this rice-beer is not given, but like the *zythus* of Egypt, it was fermented by means of herbs. The Chinese also make a beverage from Indian corn or millet steeped in water, and it is from maize or millet that the African tribes compound that beer, which forms the chief beverage of all the various races of that great continent.

It might be supposed that America, the native home of maize, so freely used throughout Africa in the manufacture of beer, would present us with various and abundant liquors made from this important cereal, but the fact seems to be that the North American Indians knew no kind of intoxicating drink before the advent of Europeans; although the Indians of South America make a drink called Chicha, from maize, in the preparation of which there is a peculiarity highly interesting to ethnologists, since fermentation is induced by the grain undergoing the process of mastication by the women of the tribe. It is chiefly in Bolivia, among the Coyas, that this disgusting practice now prevails; but there is little doubt that the custom came to them from ancient Peru, and was formerly spread widely over the southern continent, pointing strongly to some early connection with the islands of the Pacific, where, among many of the groups, the only fermented drink is Ava or Kava, prepared in a similar way, by masticating the root of the long pepper. In some of the groups and in New Zealand, the masticating process has been discontinued, and the Kava is prepared by pouring water upon the root, whilst they roast, bake, or bruise the stalks, without chewing, before the infusion; they also bruise the leaves of the plant, and pour water upon them as upon the root.† This is the mode adopted in Otaheite, but as in South America the "Chicha" prepared in the primitive way is that most highly esteemed, so

* Du Halde's "History of China," Vol. ii, p. 283.

† "Inebriating Liquors," S. Morewood, 1824.

in the Pacific Islands, connoisseurs greatly prefer the chewed Kava to that which is simply steeped and bruised.* This singular mode of preparing liquors by mastication, is not, however, confined to the South Seas and South America, but we find it again in the Island of Formosa, where rice instead of maize or Kava is used in the preparation. Mr. Morewood, who collected a great deal of information upon the subject of fermented drinks, tells us that "the inhabitants of this island, particularly on the coasts, manufacture rice-wine, and distil a spirit from it, much in the same manner as in China; but the people of the interior, who are less civilised, make their drink in a very different way. Like their neighbours they plant rice and live upon the produce; but as they have no wine or other strong liquor, they make in lieu of it another sort of beverage, which if we may believe Georgius Candidius, a missionary, who resided amongst them for a length of time, is very pleasant, and no less strong than other wine. This liquor is made by the women in the following manner:—they take a quantity of rice, and boil it until it becomes soft, they then bruise it into a sort of paste, afterwards they take rice flour, which they chew, and put with their saliva into a vessel by itself, till they have a good quantity of it; this they use instead of leaven or yeast, and mixing it among the rice paste, work it together like bakers' dough; they put the whole into a large vessel, and after having poured water upon it, let it stand in that state for two months; in the meantime, the liquor works up like new wine, and the longer it is kept the better it becomes, and, as it is said, will keep good for many years. It is an agreeable liquor, as clear as pure water at top, but very muddy and thick towards the bottom. The latter, if water be not, as in some instances, added, is frequently eaten with spoons. When they go to work in the fields they take some of the thick or muddy part along with them in a vessel of cane, and in another some fresh water; these two they blend, and when the mixture has stood awhile, it serves to refresh them during the heat and labour of the day."† Thus we see that among aboriginal races, in a line across the Pacific, from Formosa on the East to Peru and Bolivia on the West, a peculiar, and what would appear to civilised races a disgusting, mode of preparing fermented drinks prevails, the women being, in all cases, the chief manufacturers; the material employed varying according to the state of agriculture in the different localities, but the mode of preparation remaining virtually the same, although, as might be supposed, the Formosans, dwelling so near the civilised

* The chewing of Kava is done chiefly by the women.

† 'Inebriating Drinks,' by S. Morewood, 1824, p. 130.

Chinese, have acquired a more elaborate method of preparing the grain by boiling and kneading the rice into a paste.

The Japanese make a strong beer, called *Sacki*, from rice, and the inhabitants of Java make two kinds of fermented liquor from the same cereal, the one called *Bodik*, made from rice boiled and stewed with a ferment called *Razi*, consisting of onions, black pepper, and capsicum;* and the other called *Brom*, made from *Ketan* or glutinous rice, stirred with *Razi*, and buried for several months in close earthen vessels. This plan of burying liquor is also adopted in the case of the South American Chicha, which is sometimes put into a jar with a large quantity of beef, on occasion of the birth of a child, and left there to be consumed at his marriage feast. This admixture of meat with fermented liquor recalls forcibly a celebrated drink called *lamb-wine*, prepared by the Mandshur Tartars from the flesh of lambs, reduced to a kind of paste with the milk of their domestic animals, or bruised to a pulpy substance with rice; it is drawn off after fermentation into jars, out of which they regale themselves, exporting the remainder into Corea and China.† But the most common drink of all the Tartar and Mongol tribes, from the most remote antiquity, is that called Koumiss or Kumiz, which is thus described in "The Book of Ser Marco Polo," translated by Colonel Henry Yule, C.B.:—"Fresh mare's milk is put in a well-seasoned bottle-necked vessel of horse-skin, a little *kurut* or some sour cow's milk is added, and when acetous fermentation is commencing, it is violently churned, with a peculiar staff, which constantly stands in the vessel. . . . After three or four days the drink is ready. Kumiz keeps long; it is wonderfully tonic and nutritious, and it is said that it has cured many persons threatened with consumption; tribes using it being remarkably free from pulmonary disease. . . . It has a peculiar fore and after taste. Rubruquis tells us it is pungent on the tongue whilst you are drinking it, but leaves behind a pleasant flavour, like milk of almonds. . . . The Greeks and other Oriental Christians considered it a sort of denial of the faith to drink Kumiz. On the other hand, the Mohammedan converts from the nomadic tribes seemed to have adhered to Kumiz even when strict in abstinence from wine. . . . The intoxicating power of Kumiz varies according to the brew. The more advanced is the vinous fermentation, the less acid the taste, and the more it sparkles. The effect, however, is slight and transitory, and leaves no unpleasant sensation, while it produces a strong tendency to refreshing sleep. . . . There was a special kind called Kará Kumiz, mentioned both by Rubruquis

* "Inebriating Drinks," by S. Morewood, 1824, p. 130.

† *Ibid.* p. 69.

and in the history of Wassaf. It seems to have been strained and clarified.* . . . The mare's-milk drink of Scythian nomads is alluded to by many ancient authors. But the manufacture of Koumiz is particularly described by Herodotus, who says: "The (mare's) milk is poured into deep wooden casks, about which the blind slaves are placed, and then the milk is stirred round. That which rises to the top is drawn off, and considered the best part; the under portion is of less account."† Perhaps Herodotus was mistaken about the wooden tubs; at least, all modern attempts to use anything but the orthodox skins have failed.‡

The "*Kurut*," used to produce fermentation, is made, according to Rubruquis,§ from the milk that remains after the butter has been made, which they allow to get as sour as sour can be, and then boil it. "In boiling it curdles, and that curd they dry in the sun, and in that way it becomes as hard as iron slag, and so it is stored in bags against the winter. In the winter when they have no milk they put that sour curd, which they call *Griut*, in a skin and pour warm water on it, and then shake it violently till the curd dissolves in the water, to which it gives an acid flavour; this water they drink in place of milk. But above all things they eschew drinking plain water."||

This *Griut* is still made in the same manner, but sometimes of the refuse from the distillation in making milk arrack, and sometimes also from ewe's milk. The Afghans make a drink similar to Koumiss from ewe's milk, and there would seem to be a trace in our own land of a similar liquor, for in "The Transactions of the Devonshire Association for 1877," there is a description of what is called "White Ale," which is said to have been a common drink until recently in the South Hams of Devon and in Cornwall; this is known also by the name of "St. Barnaby's cow's thick milk," and is supposed to be the same as "Grout Ale," spoken of by Bishop Kennet, because the ferment used in its manufacture is still called Grout.¶ This ale although made, according to Boorde (1511-1549), of "malt and water," with the peculiar ferment called "Grout" would yet seem, from the traditional name of "*thick milk*" given to it and from the name of the ferment employed, to have been derived originally from the Tartar Koumiss.

* The book of "Ser Marco Polo," translated and edited with notes, by Col. Henry Yule, C.B. Book I, cap. 53; note 1.

† Rawlinson's "Herodotus," iv, 2.

‡ The Kafirs now sometimes use calabashes and baskets, whilst the Europeans at the Cape employ large earthenware jars for this sour milk.

§ A Monk sent as Ambassador to the East by Louis IX, in 1253.

|| "Marco Polo," Book i, cap. 54; note 5.

¶ Grout means both powdered meal, used in porridge, and a ferment in brewing.

This drink of sour milk, which now seems confined to the Tartar races in Asia, appears again among the Kaffir tribes in South Africa, by whom it is prepared in a very similar manner, and carefully stored in skin bags which are placed under the guardianship of one man in the village, no woman being allowed to touch them. In what way the Kaffirs became possessed of the secret of making this famous Scythic beverage we do not know. As a race they have very evidently come from a more northern land than that which they now inhabit, but it seems difficult to trace among them any Scythic affinities; nevertheless we find them also making and using another famous ancient northern beverage, mead or honey beer, called by the Bachapins "boiálloa.* This mead is fermented by means of the young brood, which I am informed is sometimes chewed to hasten the process, but this is not mentioned by travellers, and may be a misapprehension. Mead is also used by the natives of the neighbouring island of Madagascar, and Poncet tells us that it is the chief drink of Ethiopia; but in the mead of Ethiopia honey forms only *one* of the ingredients, the manufacture of this drink being thus described: "The barley which forms the basis of it is malted to a certain degree, and then dried as we do coffee, and pounded fine, while an indigenous root called *taddo* is bruised and mixed with the barley. This differs from the mead of the Kaffirs, which consists only of the fermented honey and water, and thus probably resembles more nearly the Scandinavian drink, since the northern nations could hardly have possessed grain in sufficient quantity to employ it in the making of mead."

In Russia† at the present day mead is much used, and is of two sorts, red and white, the former being coloured by the juice of cranberries, strawberries, raspberries, or cherries. It was, as we know, a favourite beverage in Britain in Anglo-Saxon times, and was known to the Greeks and Romans under the name of Hydromel.

Wulfstan, when he navigated the Baltic as far as Prussia in the eighth century, remarked that the people there brewed *no ale* because they had such plenty of honey, which was also remarked by Pythias many centuries before, who says that *mead* was the common drink of the meanest of the people, while the rich drank mare's milk, or perhaps a spirituous liquor prepared from it.‡ These two beverages thus brought under considera-

* Mead is also made by the Hottentots, who add to the honey the root of an umbelliferous plant called "Moor-wortel." See Thunberg.

† Quass, the ordinary drink of the Russian peasants, is made from barley and rye-malt and rye-meal stirred into warm water. "Inebriating Drinks," S. Morewood, p. 258.

‡ "Inebriating Drinks," S. Morewood, p. 435.

tion together, as commonly used by the northern nations of Europe and Asia, and still both drunk by the Kaffirs in South Africa, do not appear to have been known to the Ancient Egyptians, for although honey was highly prized and used as an offering to the gods, it was, we are told, scarce in Egypt because of the lack of flowers, so that they often rowed their bees down the Nile to collect food,* and the Egyptians being an agricultural rather than a pastoral people, it was natural that grain should form the basis of their ordinary drinks. It is possible also that religious prejudices may have prevented the use of milk as a common drink; but in India, where the cow is a sacred animal, there seems to be a trace of the time when they brought from their northern home the knowledge of the Scythic *Koumiss*, in the fable of the churning of the ocean for the water of life, but it is Soma wine, the juice of the *moon-plant* (*Asclepias acida*), which is so highly praised in the Vedas.

Writing upon this subject Mrs. Speir says: "Indra," it is said, "found this treasure from heaven, hidden like the nestlings of a bird in a rock, amidst a pile of vast rocks enclosed by bushes." The manufacture of this sacred drink is thus described: "The stalks are bruised with stones, and placed with the juice in a strainer of goat's hair, and are further squeezed by the priests two fingers, ornamented by rings of flattened gold. Lastly, the juice, mixed with barley and clarified butter, ferments, and is then drawn off in a scoop for the gods, and a ladle for the priests, and then they say to Indra, 'Thy inebriety is most intense, nevertheless thy acts are most beneficent.' This Soma wine formed the chief offering to the gods; the plant was sought with care by moonlight, and brought home in a cart drawn by rams. In one of the hymns of the Rig Veda, Indra is addressed as 'Drinker of the Soma juice, wielder of the thunder-bolt, bestow upon us abundance of cows with projecting jaws.'"[†]

From the importance assigned to the Soma, Mrs. Speir argues justly that we may determine the locality of the Hindus at the time of the Rig Veda; she says:—"The Soma is a round, smooth, twining plant not to be found in rich soils, as we learn from Dr. Royle, but is peculiar to the mountains in the west of India, the desert to the north of Delhi, and the mountains of the Bolan Pass. The Rig Veda, therefore, could not have been composed upon the Ganges.[‡] But there are other points of peculiar interest with regard to this subject. Indra, the great nature-god of the Hindus, is connected, Mrs. Speir tells us, with the horse sacrifice in honour of the sun, which is regarded as a trace of

* See Wilkinson's "Ancient Egyptians."

† See "Life in Ancient India," Mrs. Speir, pp. 52; *et seq.*

‡ *Ibid.* p. 55.

the Scythic origin of the Hindus, but the Soma so especially dedicated to Indra, is not only sacred to the moon, but was later confounded as a deity with the moon. It would seem therefore as though we saw in this the blending of the new worship of the invaders, with the older rites of the aboriginal moon dynasty, whilst the difference in the manufacture of the sacred Soma wine and the mystic *amrita* is also worthy of notice. In the former the process is analogous to the manufacture of Kava in those islands in which the dawn of civilisation has done away with the masticating process; in the latter the agitation of the ocean by means of the mountain *Mandar* used as a churning staff, or as the fire-churn, and the rising of the precious liquor to the surface, remind us forcibly of the Scythic *Koumiss*, whilst the admixture of barley and clarified butter with the Soma wine would suggest that this famous liquor was originally only a modification, necessitated by circumstances, of the beer and Koumiss of the north, the Soma being employed at first as many other plants have been employed, simply as a ferment, but manufactured afterwards in the mode adopted by the natives before the Aryan invasion, with the addition of the ingredients familiar to the invaders in their northern home. Soma wine was, however, a sacred drink, and the Institutes of Menu give us three other kinds of inebriating beverages in use among the Hindus: one made from the dregs of sugar, another from bruised rice, and a third from the flowers of the Madhuca, which latter is still made by the Bheels, who are supposed to represent an aboriginal race.*

Palm wine, *tari*, the original of the familiar *toddy*, is a favourite beverage in all countries wherein the palm-tree flourishes. Herodotus tells us that in the time of Cambyses (B.C. 529) the Syrians were well skilled in the manufacture of palm wine, and Strabo says that in Arabia-Felix, besides the husbandmen, there were many who made palm wine which was much used by the inhabitants, and it would seem that notwithstanding the prohibition of the Prophet, inebriating drinks are still made in Arabia, for Niebuhr says that in many parts of Arabia the Jews made wine and distilled brandy, whilst in other places a sort of beer, something like the Egyptian *curmi*, was brewed, which received an agreeable taste from an infusion of a grey herb called "Schebe."†

The Bolgars make a drink from fir-trees, also drink Hydromel; and many other fruits, roots, and grasses‡ have been used in

* The Afghans make a strong drink from ewes' milk, and in Iceland they put whey in barrels and drink it after fermentation. See Morewood.

† "Inebriating Drinks," S. Morewood, p. 55. *Ibid.* p. 265.

‡ The Kanstschatkans make a spirit from a grass called "Stalkaia-kava."

various countries in the manufacture of fermented beverages, but the only one deserving special mention here is the *pulque* of Mexico, made from the *agave* or American aloe, which like the Indian Soma wine was a sacred liquor, but like the Kava of South Seas was also the common drink of the people.

As before noticed, the Red Indians had no fermented drink, but Schoolcraft says: "It is well attested that the Aztecs and other Mexican and Southern tribes had their pulque and other intoxicating drinks, which they possessed the art of making from various native grains and fruits. But the art itself, with the plants employed, was confined to those latitudes, and there is no historical evidence to prove that it was ever known or practised by the tribes situated north and east of the Gulf of Mexico."* This absence of intoxicating beverages among the Red Indians would militate against the theory of their Asiatic origin, and equally against the unity of race of the whole continent, as the fondness for intoxicants exhibited by these tribes since the introduction of the spirituous liquors of the White man, proves that they would have continued to make and use the beverages of their ancestors or of their neighbours, had they ever attained to a knowledge of them; therefore if they were originally of Mongolian origin, they must have separated from the parent stock before the latter had become a pastoral people delighting in that fermented milk which has extended over northern Asia, and reached to Iceland and South Africa, and which probably had a wider range still before it was superseded by drinks prepared from fermented grain of various kinds among agricultural races, and by *wine*, that is, the fermented *juice of the grape*, among more highly civilised peoples.

Grape wine, which has become so familiar to us in modern times, dates back, as we all know, to the time of Noah; nevertheless its range in ancient times seems to have been somewhat circumscribed, embracing only Western Asia, Egypt, Greece and Rome. Even where grapes grew abundantly they were not always employed in the manufacture of wine; thus in China, where grapes undoubtedly grew of old, wine, even if made at all, which is doubtful, never attained popularity, and by the decrees of various emperors, the vines have been extirpated; and we learn from the "Book of Ser Marco Polo" that, "the founder of the Ming dynasty in 1373 accepted an offering of wine of the vine from Thaiynan, which was celebrated for its vines, but prohibited its being presented again." We are told also that although there are excellent grapes in many parts of Ethiopia, no wine is manufactured, mead being the chief drink. But the juice of the

* "The Indian in his Wigwam." Schoolcraft, p. 358.

grape was undoubtedly known and esteemed in very ancient times among the Hebrews, Egyptians, Assyrians, Persians, Greeks and Romans. "Sir James Malcolm says in his account of Persia that the natives have a tradition that wine was discovered by their King Jemisheed through accident. This monarch had an extraordinary fondness for grapes, and placed a quantity in a vessel in a cellar for future use. Some time after, the vessel being opened, the grapes were found to have fermented, and were supposed to have become poisonous. A lady of the Harem, tired of her life, from severe nervous headache, drank some of the supposed poison, slept, awoke well, and afterwards finished all the poison; the monarch took the hint, and improved upon it for his own advantage."*

It is worthy of remark that the wine of the East, like the Koumiss of the Tartars, was stored in skins, and in this form was first introduced into Greece and Rome, and so strong is the force of an acquired taste, that when earthen amphoræ, such as were used in Egypt and in China, were adopted, they invariably smeared them internally with resin and other substances, to impart to the wine as much as possible the flavour derived from the original skin bags; and it would appear that this custom is still retained in modern Greece, for Redding says, "The modern traveller in Greece cannot drink a small quantity of the wine there without water, for the intense headache it excites, owing to the infusion of resin, pitch, and other similar ingredients; substances of the same nature as were infused in the Augustan age in the dry as well as other wines."†

Pliny enumerates fifty kinds of generous wines; thirty-eight kinds of foreign wines; seven kinds of salted wines, that is, must mixed with sea-water; eighteen kinds of sweet wines, including raisin wine and hepsema; three varieties of second-rate wine; and sixty-six varieties of artificial wine.‡ Of all these, the wines perfumed with myrrh were the most esteemed by the Romans. The artificial wines were formed of must, mixed with all sorts of garden plants, such as radishes, asparagus, parsley, wormwood, &c., &c. Most of these were used medicinally, and it may be observed that the unpalatable wormwood is still used to make the favourite liqueur of the French, *absinthe*. In Egypt also, figs, pomegranates, myxos, and other fruits were used for making artificial wines, and herbs were added for flavour and for medicinal qualities,§ and, in truth, the use of

* Redding "On Modern Wines," p. 33.

† *Ibid.* p. 18.

‡ Pliny, Book xiv.

§ See Wilkinson's "Ancient Egyptians."

herbs as medicines seems to lie at the root of all the beverages of the ancients and of modern savages.

Time will not permit me to enter into the most interesting subject of narcotics and poisons used by way of ordeal, nor can I here treat fully of the various unfermented beverages used in various parts of the world, such as the tea of China and Japan, the maté of South America, the liquor made from guarana bread in Brazil, the chicolatl of Mexico, the coffee of Arabia and Africa; but in summing up what we have gathered from the imperfect records of travellers upon the stimulants above noticed as in use among the natives of various lands, we may, I think, conclude that among the lowest races roots and leaves are commonly chewed as stimulants, and no intoxicant is known. Thus we have the *Pitbury* in use among the savage Australians. The Kon or Canna-root (*mesebryanthemum emarcidum*) chewed by the Bushmen and Hottentots, of which Thunberg says: "The Hottentots come far and near to fetch this shrub, with the root, leaves and all, which they beat together and afterwards twist them up like pig-tail tobacco; after which they let the mass ferment and keep it by them for chewing, especially when they are thirsty. If it be chewed immediately after fermentation it intoxicates." Adding, "the Hottentots who traverse the dry carrow-fields (*Karoo*) use several means, not only to assuage their hunger, but more particularly to quench their thirst. Besides the above-mentioned plant called Kon or Gunna, they use two others, namely, one called Kameká or Barup, which is said to be a large and watery root; and another called *Ku*, which is likewise, according to report, a large and succulent root."* The use of the areca or betel-nut with lime, in New Guinea and many islands of the Eastern Archipelago, is well-known, and a similar custom prevails in South America, for Bollaert says of the Indians of Tarapaca: "With a little toasted maize and coca, they will travel for days over the most desert tracks. The coca is masticated with Kipta, an alkaline ash mixed with boiled potato."†

It may be observed that the use of leaves in this manner is a necessity in hot climates where water is scarce, and which even when obtainable is frequently unwholesome, and it is to this circumstance probably that we must attribute the universal use of stimulants. Moses, when he cast into the bitter waters of Meribah a branch of a certain tree, did that which the natives of Africa and other desert lands have been taught by necessity to do, that is, to render brackish and unwholesome water drinkable, if not palatable, by an infusion of herbs; and this was

* Thunberg's "Account of the Cape of Good Hope."

† "Antiquities of South America," W. Bollaert, p. 250.

doubtless the origin of the various teas consumed by natives of Asia, Africa, and America, one only of which has become a favourite European beverage, although we have adopted coffee, chocolate, and cocoa from their original consumers. To this also may be traced the second stage in the history of stimulants in which the chewed leaf or root being infused in water a slight fermentation ensues, and a beverage is produced which is mildly intoxicating, as the Kava of the South Seas. Among agricultural races the *grains* cultivated are pounded and infused instead of the leaves and roots of an earlier stage, the latter, however, being retained to flavour and ferment the various beers thus made; hence, although hops were unknown to the ancients, various plants supplied their place with regard to flavour, and although they do not appear to have had the same efficacy as a preservative they were found useful in aiding fermentation. Hence we are told, "the Kaffirs have no yeast, but employ a rather curious substitute for it, being the stem of a species of ice plant, dried and kept ready for use;"* whilst the Chinese hop is a preparation containing leaven, so that its use causes fermentation. Among pastoral tribes the milk of their flocks and herds became their natural drink, and the readiness with which this ferments, and the impossibility of keeping it long fresh, led to its use in the form of a powerful stimulant, whilst in a higher stage of civilisation the juice of the grape, either grown or imported, gradually superseded the more primitive beverages. But in all these stages may be traced the lower stage through which each has passed; thus the chewing of leaves as practised by savages, either to quench thirst or produce strength and courage, is retained among agricultural races chiefly in the form of medicine, a peculiar efficacy being attributed to the process of mastication; hence in Central Africa the root of the Kala is chewed and applied to a wound as an antidote to the poisonous N'gwa grub. The fermentation of grain was probably at first produced by mastication, in the same manner as the Kava of the South Seas; but this process is now confined to the Chicha of South America, and the rice beer of Formosa, as before pointed out, whilst the healing and invigorating properties attached to various plants, as discovered in most instances by savages, have led to their medicinal use in all ages; and upon the birth of religion caused the deification of various plants, and led later to their dedication to special gods, and to their superstitious use in religious ceremonies, culminating in the universal worship of Bacchus, the personified vine, in civilised Greece and Rome. The health-giving properties attributed to the several drinks we

* Wood's "Natural History of Man" (Africa). p. 163.

have described, imparted a religious character to their use, so that all drunken orgies, from the Kava-drinking of the South Seas to the feasts of the civilised Greeks, were commenced with libations to the gods. Hence, too, arose various ceremonies, one of which, that of the drinking of healths at feasts, has survived to our own day, hence also certain prohibitions became attached to the use of fermented liquors. The priests of Heliopolis and other places were forbidden the use of wine; women among the Kaffirs may not touch the milk bags, and during the early period of Roman History they were not allowed to drink wine. Even the shape and material of the vessels used seems to have been regarded as important. In most ancient nations the drinking-cups were pointed in form, that they might be emptied at a draught, and the Kava of the South Seas is still drunk from pointed cups of banana leaf, which are emptied and thrown down to be re-filled.

Perhaps the leaf was considered the proper receptacle for the produce of the plant, for we find that even where pottery was abundant, leaves were employed to make drinking vessels. Pliny tells us that the Egyptians plaited the leaves of the Colocasia with such skill as to make use of them for drinking vessels: in many parts of Africa grass baskets are still manufactured to hold the beer and milk of the natives, and "finely wrought reed baskets, in various colours, capable of holding water,"* have been found with mummies in Peru, whilst perhaps the finely plaited basket-work surrounding the delicate porcelain cups of China may be a survival of the same custom.

I have said nothing of the art of distillation, because that is comparatively modern. Its origin is usually ascribed to the Arabs, but it was undoubtedly early known to the Tartars, who from their Koumiss extracted a spirit called "*Araka*," conjectured by some from its high antiquity to be the true source from whence the Indian arrack derives its name.† Pliny too is supposed to refer to this art in the passage "Oh wondrous craft of the vices! by some mode or other it was discovered that water also might be made to inebriate."‡ Zozimus also in the fourth or fifth century is said to have figured a still; but whatever may be the antiquity of the art, it is the disgrace of our modern civilisation to have introduced among savage races that pernicious fire-water, which in so many instances has supplanted the mildly fermented stimulants to which they have been accustomed, and has become one of the chief factors in their rapid extermination.

* Bollaert's "*Antiquities of South America*," p. 157.

† "*Inebriating Liquors*," S. Morewood, p. 67.

‡ Pliny, N.H. Book xiv, p. 22.

DISCUSSION.

Dr. BEDDOE said, that in reference to Koumiss and its supposed anti-phthysical properties, he had once heard an amusing little speech from the great Skoda. A discussion was going on in the Vienna Medical Society, which somewhat reminded him of that famous one in the early days of our Royal Society. It was on the exemption of the Bashkirs from consumption, by reason of their drinking Koumiss; some explained it in one way, some in another. Then said Skoda, "Respecting these wretched Bashkirs, and how from phthisis, by reason of their Koumiss-drinking, altogether exempt they be; this night has very much been said, but for my part I most potently believe that, in addition to the other miseries of their God-forgotten condition, they not only from phthisis are not free, but from it altogether as much as we, if not even greatly more, do suffer."

The DIRECTOR read a paper contributed by Mr. SANDERSON on "Polygamous Marriages in South Africa."

POLYGAMOUS MARRIAGE *among the KAFIRS of NATAL and COUNTRIES AROUND.* By JOHN SANDERSON, Esq.

Having, a few years ago, been led to make some inquiry into the numbers of children, with their respective sexes, born among the Kafirs resident in Natal or the countries adjoining, it may not be without interest for this meeting that I should communicate the results. The mass of facts collected is too small to warrant any positive general deductions, but small as it is, it will not be altogether without value if it suggest some line of further investigation for those who may be enabled to pursue it.

Even in Natal, I need hardly say, no official statistics of this character are obtainable, and my information is, therefore, derived from inquiries among intelligent natives, whose replies, in reference to their own families, and those of their connections, were generally given so readily and precisely that I am prepared to accept them without hesitation, as fairly correct. One or two cases in which any doubt was exhibited as to the sex of the children, I have not taken into account at all.

The number of households to which the following figures relate is fifteen, in five of which the wives were two each; in four they numbered three; in two they were four; and in two they were five in number; while in the two remaining, the husband had six and eight wives respectively. It is to be noted, however, that in probably none of the cases can the number be

regarded as final ; by which I mean that so long as the head of the household was alive, the number of the wives or the children might be added to ; and my figures must, therefore, be taken as subject to correction, which would not apply to cases where, the husband being dead, the numbers were absolutely complete.

Of the fifteen households, two only had the children of each sex in equal number ; but the number of marriages in which this was the case was nineteen ; and taking individual families or marriages, the boys were in excess in twenty-five, while in ten their number was exceeded by the girls.

To look at the matter more in detail it may be advisable to set the figures forth at length, marking with a star each case where the child was known to be dead when the inquiry was made. The following households had—

TWO WIVES :

NTEMBA.

	Boys.	Girls.
First wife, b. g.	1	1
Second wife, g.g. b.b. g.b.	3	3
	<hr/> 4	<hr/> 4

MPOPO.

First, b. g. b. g. g. b. b.* g.*	4	4
Second, g.* g.* g.* b. g.	4	1
	<hr/> 8	<hr/> 5

UMANDHLOLE.

First, b. b. b. b. g. g.	4	3
Second (order uncertain)	2	1
	<hr/> 6	<hr/> 4

MBONDWANA.

First, b. g.* b.* b. b. g.	4	2
Second, g. b. g. g. g.	1	4
	<hr/> 5	<hr/> 6

NOKAKWA

First, b. g.* b. b. g.	3	2
Second, b. g. g.* b.	2	2
	<hr/> 5	<hr/> 4

Five households, having each two wives had, boys	28
girls	23
Total	<hr/> 51

We have here five households, in four of which the male births exceed the female, the boys being 24 in number, and the girls 19—an excess of more than 25 per cent. Of the ten wives, however, four have an equal number of children of each sex; with five, the boys preponderate, while one only has more girls than boys. One wife only of the ten has twins, and she has them at every birth; first two girls, then two boys, and finally a girl and a boy. In six out of the ten families a boy is the first-born; in three the first-born is a girl; in one case my informant was uncertain.

Coming next to the households in which the wives were three in number, of which there are four, we find

THREE WIVES.

NKUKWANA.

					Boys.	Girls.
First, b. g. b. g. b. . .	..	..	..	..	3	2
Second, b. g. b. b. . .	..	..	..	..	3	1
Third, g. b. . . . .	..	..	..	..	1	1
					<hr/>	<hr/>
					7	4

MTSHED.

First, b. g. b. b. g. g.	..	..	..	..	2	3
Second, g. g. b. . .	..	..	..	..	1	2
Third, b. b. g. . .	..	..	..	..	2	1
					<hr/>	<hr/>
					5	6

NDONGA.

First, g. b. g. g. . .	..	..	..	..	1	3
Second, b. g. g. . .	..	..	..	..	1	2
Third, b. g. b. g. . .	..	..	..	..	2	2
					<hr/>	<hr/>
					4	7

TONSI.

First, b. b. g. b. b. . .	..	..	..	..	4	1
Second, b. g. . . . .	..	..	..	..	1	1
Third, b. g. . . . .	..	..	..	..	1	1
					<hr/>	<hr/>
					4	3

Four households, each three wives, had boys	..	20
girls	..	20
		<hr/>

Total	40
-------	----

In two out of the four households the boys are in excess; in the other two the girls preponderate, although, taking the whole of the families together, the numbers are equal. Four out of the twelve wives have equal numbers of boys and girls; four have

more girls than boys, and four have more boys than girls. In nine cases out of the twelve the first-born is a boy. No case of twins occurs in these twelve families.

We come now to two households in which there are four wives each. In one household the children of each sex are equal in number, eight and eight respectively ; in the other the boys number seven, and the girls five. The sexes are equal in three families, and in five out of the eight the first-born is a girl. In these two households of four wives each, there is no case of twins.

The figures are as follows:—

FOUR WIVES.

NONJIA.

					Boys.	Girls.
First, g. b. g. b. g. ..	..	..	..	..	2 ..	3
Second, g. b. g. b. ..	..	..	..	..	2 ..	2
Third, b. b. g. ..	..	..	..	..	2 ..	1
Fourth, g. b. g. b. .	..	..	..	..	2 ..	2
					<hr/> 8 ..	<hr/> 8

MPOGOPOGO.

First, b.	..	..	..	..	..	1	..	0
Second, g. b. g. b.	..	..	..	..	..	2	..	2
Third, b. g. b. b.	..	..	..	..	..	3	..	1
Fourth, g. g. b.	..	..	..	..	..	1	..	2
						<hr/>		<hr/>
						7	..	5
Two households (each four wives) had	boys	..	15					
	girls	..	13					
						<hr/>		<hr/>
	Total		28					

We have next two households of five wives each, that is ten wives, three of whom have an equal number of boys and girls, and one only has more girls than boys, the boys being in excess with six out of the ten. The same number, six, but not the same women, have boys at the first birth, girls being the first-born to the remaining four. Here again, out of forty-three births, we have no case of twins.

The following are the details:—

FIVE WIVES.

GEBUZA.

	Boys.	Girls.
First, b. b. b. g. b. . .	4	1
Second, b. b. g. b. b.	4	1
Third, b. b. g. b. g. . .	3	2
Fourth, g. g. b. b. . .	2	2
Fifth, g. b. g. b. b.	3	2
	<hr/> 16	<hr/> 8

SUTSHANA.

	Boys.	Girls.
First, g. b. b. b.	3	1
Second, g. g. b. g.	1	3
Third, b. b. g. g.	2	2
Fourth, b. g. b. g.	2	2
Fifth, b. g. b.	2	1
	<hr/>	<hr/>
	10	9
Two households, with five wives each, had	boys	26
	girls	17
	<hr/>	<hr/>
Total	43	

I have particulars of but one household with six wives, three of whom have boys and girls in equal numbers, and present no case of girls in excess, and no case of twins, as will be seen from the following figures. In four instances out of the six the first child born is a boy:—

SIX WIVES.

DUBUYANA.

	Boys.	Girls.
First, b. g. b. g.	2	2
Second, g. b. g.* b.* b.	3	2
Third, b. g. b. b.	3	1
Fourth, b. b. g. g.	2	2
Fifth, b. g. g. b.	2	2
Sixth, g. b. g. b. b.	3	2
	<hr/>	<hr/>
	15	11
One household with six wives, had	boys	15
	girls	11
	<hr/>	<hr/>
Total	26	

The last household of which I have any details to lay before you is one which contained

EIGHT WIVES.

NYENGENYA.

	Boys.	Girls.
First, b. g. b.	2	1
Second, g. b. b. b.	3	1
Third, b. g. b. g. b.	3	2
Fourth, g. b. g.	1	2
Fifth, g. b. b. g.	2	2
Sixth, g. b. g.	1	2
Seventh, b.* b.* g.* g.*	2	2
Eighth, b. b. b. g. g.*	3	2
	<hr/>	<hr/>
	17	14
One household with eight wives, had	boys	17
	girls	14
	<hr/>	<hr/>
Total	31	

In four families out of the eight the boys are in excess, in two the girls are more numerous than the boys, the numbers being equal in the remaining two. Girls and boys are born first in an equal number of cases, and here again we have no case of twins.

The five families in which twins are reported are (with one remarkable exception) not included in the above figures. They are as follows:—

					Boys.		Girls.
Njwaini, b. g.	..	..	..	..	1	..	1
Ndangusa, g. g.	..	..	..	..	0	..	2
Loho, g.g.	..	..	..	..	0	..	2
Mkweba, g.* g.*	..	..	..	..	0	..	2
The exception is that of Ntemba, g.g. b.b. g.b.					3	..	3
					<hr/> 4	..	10

To sum up, and excluding the four families above named, in which twins occurred, and regarding which I have no further information, we have

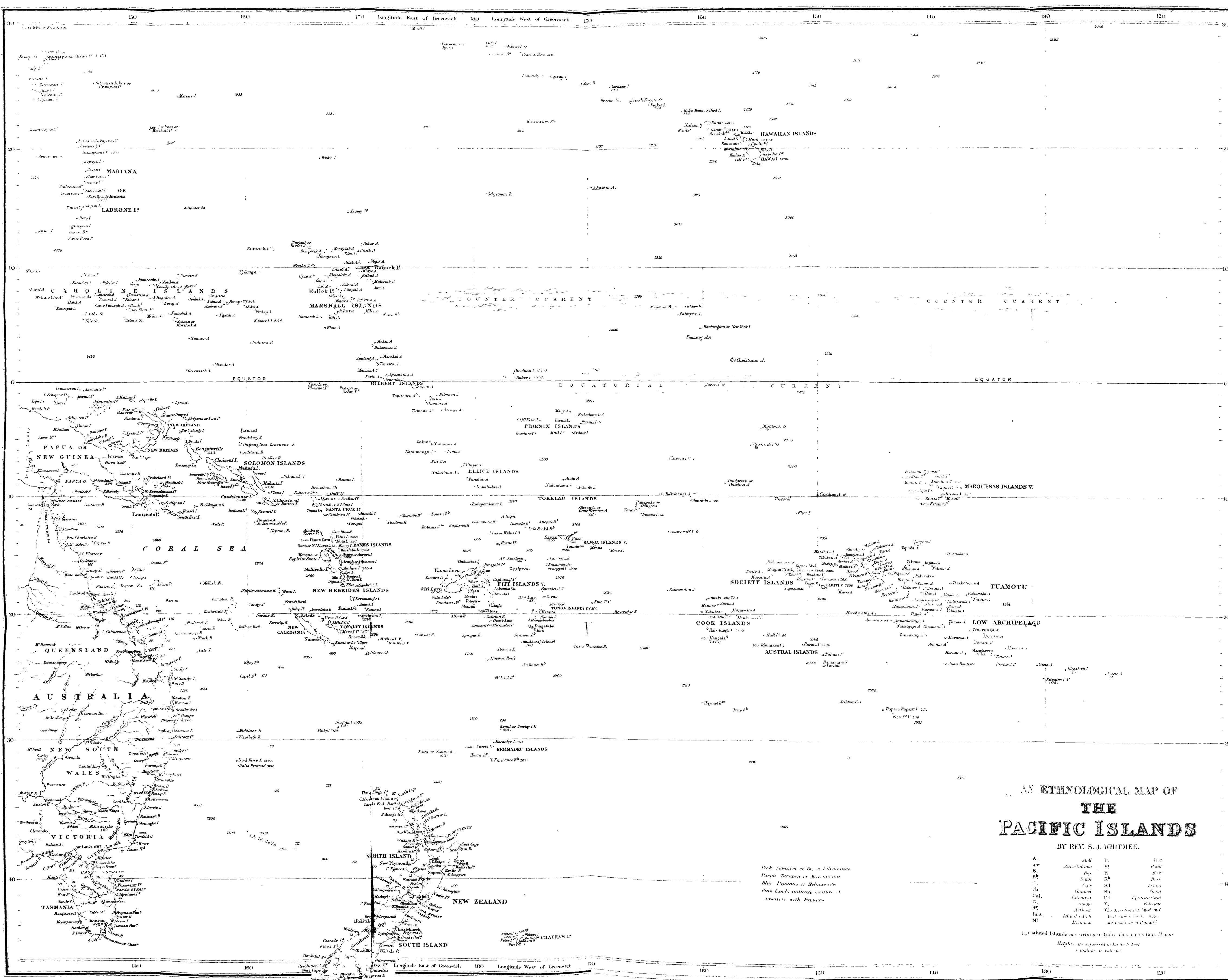
Households	..	..	..	..	..	..	15
Wives	..	..	..	..	..	..	54
Wives having one child only	..	..	..	..	..	1	54
" " two children	..	..	..	..	..	4	
" " three "	..	..	..	..	..	10	
" " four "	..	..	..	..	..	20	
" " five "	..	..	..	..	..	15	
" " six "	..	..	..	..	..	2	
" " seven "	..	..	..	..	..	1	
" " eight "	..	..	..	..	..	1	54
" " boys and girls equal	..	..	..	..	..	19	
" " boys in excess	..	..	..	..	..	25	
" " girls "	..	..	..	..	..	10	
Total number of children 219. Total number of boys 121. Total number of girls 98							
Average children to household	..	..	..	..	..	14.6	
Each wife has on an average, children	..	..	..	..	..	4.05	
The first-born is a boy, in cases	..	..	..	..	..	32	
" " girl	..	..	..	..	..	21	
The order is uncertain in	..	..	..	..	..	1	
The record of deaths may be incomplete, but so far as it goes, it shows that out of fifteen households five have lost children, namely :—							
	..	..	..	..	..	5	
					Boys.		Girls.
Mpopo	..	..	..	..	1	..	4
Mbondwana	..	..	..	..	1	..	1
Nokukwa	..	..	..	..	0	..	2
Duburana	..	..	..	..	1	..	1
Nyenganya	..	..	..	..	2	..	3
					5		11

I have no figures of any value relating to monogamous marriages among the Kafirs. It will be observed that of the 54 women to whom the figures given relate, one only had twins, and as we have seen, she had twins at each of her three confinements. One native, whom I questioned on these subjects, remembered five cases of twins, and knew of others, the particulars of which he had forgotten. He had never known a case of triplets. In the case of twins, infanticide was formerly practised in the Zulu country, though, I am informed, not in Natal, the least and weakest being put to death. This was formerly the practice among the chiefs as well as the common people, the object, doubtless, being to keep up the strength of the stock, and the alleged exception in reference to Natal, in reality is only intended to apply to the country since it has been under British rule.

In concluding these imperfect notes upon a subject of considerable interest, I have only to express my regret that they should be so incomplete, notwithstanding my endeavours to enlist the aid of several missionaries, whose opportunities of collecting statistics were much better than my own. I am still, however, in hopes that I may be able to obtain, at some future time, figures which may afford a better basis for generalisation than the few data which I have had the opportunity of laying before you on this occasion.

DISCUSSION.

Mr. LEWIS thought the paper of great value, so far as it went, and hoped that they should receive more particulars on the same subject from the Author. There was an impression that polygamous marriages produced a larger number of female than male children, which this paper went to show to be erroneous. The analogy of our cattle, sheep, and poultry, would also go to show that impression to be erroneous, as they were particularly polygamous, yet produced equal numbers of each sex, our food supply consisting in fact of the superfluous males. It would be interesting to know, however, whether the mortality amongst male Kafirs was very much greater than amongst the females, because, if not, the births being equal and polygamy being the rule, many men must have no wives at all, which would lead to very unsatisfactory social conditions. It would also be well if the Author could state positively whether the births mentioned by him were all that had occurred in each family, or whether he had only given the numbers and sexes of children living at the time of his inquiry, or which had survived for some years the infant mortality which, as reported, was remarkably small, being possibly such as to alter any conclusions that might be drawn from the proportions of sexes and other particulars given.



AN ETHNOLOGICAL MAP OF
THE
PACIFIC ISLANDS

BY REV. S. J. WHITNEY.

Pink Swallows or B. on Polynesians
Purple Tarapen or Micronesians
Blue Papuans or Melanesians
Pink bands indicate mixture of
Swallows with Papuans

A.	Atoll	P.	Point
av	Atoll-Volcano	P!	Point
B.	Bay	R.	Reef
BK	Bank	RK	Reef
C.	Cape	Sd	Sand
Ch.	Channel	Sh	Shoal
Col.	Colony	TI	Transitional
G.	Group	V.	Volcano
HP.	Hill	V!	Volcano
L.A.	Lake	V!	Volcano
M.	Mountain	V!	Volcano

Unsettled Islands are written in Italic Characters thus *St. John*
Height is expressed in Feet
Shading in relief

JUNE 25TH, 1878.

JOHN EVANS, Esq., D.C.L., F.R.S., *President, in the Chair.*

The minutes of the previous meeting were read and confirmed.

Dr. PAUL TOPINARD, Professor à l'Ecole d'Anthropologie de Paris, was announced as an Honorary Member.

The following new Members were also announced—H. W. Jackson, Esq., M.R.C.S., Dr. Dunkley, and the Rev. H. W. Watkins.

The following presents were announced, and thanks were ordered to be returned to the respective donors for the same :—

FOR THE LIBRARY.

From the ACADEMY.—The Transactions of the Academy of Sciences of St. Louis. Vol. III, No. 4.

From the SOCIETY.—Proceedings of the American Philosophical Society. Vol. XVII, No. 100.

From the ASSOCIATION.—Transactions of the National Association for the Promotion of Social Science, 1876.

From the SOCIETY.—Journal of the Bombay Branch of the Royal Asiatic Society. Vol. XII, No. 35.

From the EDITOR.—Revue Internationale des Sciences. Nos. 24 and 25, 1878.

From the EDITOR.—“Nature” (to date).

From the BERLIN ANTHROPOLOGICAL SOCIETY.—Zeitschrift für Ethnologie. No. 6, 1877.

From the SOCIETY.—Proceedings of the Royal Society. Vol. XXVIII, No. 187.

From the EDITOR.—Revue Scientifique, Nos. 50 and 51, 1878.

The following papers were read :—

The ETHNOLOGY of POLYNESIA.

By Rev. S. J. WHITMEE, F.R.G.S., C.M.Z.S.

IN this paper I shall endeavour to show the distribution of races of men in the intertropical islands of the Pacific. The map with which, by the liberality of the Council of the Institute, the paper is illustrated, presents to the eye what is here recorded. In its main features this map agrees with the ethnographic charts of the Pacific already published, but it gives

more details than any preceding map. It has been constructed entirely from my own personal knowledge of the people, or from information obtained from persons who have lived on, or travelled amongst, the islands in various parts of the Pacific. Hence, so far as it is worth anything, it may be regarded as an independent confirmation of the researches upon which previous ethnographic maps of the Pacific have been based.

Possibly some members of this Institute may be doubtful whether I am justified in taking for granted the existence of the different races of men which the map indicates. At least one eminent naturalist—Mr. A. R. Wallace—has within the past few years declared his belief that all the people inhabiting the islands of the Pacific, from the Hawaiian Islands in the North to New Zealand in the South, and from the Solomon Islands and the New Hebrides in the West to the most distant Eastern islands, are but varying forms of one great Oceanic race.

As some of you know, I have already controverted this view.* And I have the satisfaction of knowing that several eminent men of science and Ethnologists who have given attention to the subject think Mr. Wallace is wrong. As far as I am aware, however, he has not up to the present time admitted this; but he has not attempted to disprove the argument, or explain the facts which have been adduced in opposition to his view. Last year a friend told me Mr. Wallace had said he had not given any further consideration to the subject since the publication of his "*Malay Archipelago*." Now that he is engaged in editing the volume on Australasia and Polynesia in Mr. Stanford's "*Compendium of Geography and Travel*," perhaps we may hope he will be led to reconsider this question, and to give us the benefit of his views after further study.

I shall not at the present time attempt further disproof of Mr. Wallace's theory, or recapitulate the race characteristics of the Polynesians. But in this connection I wish just to mention the lecture on "*The Native Races of the Pacific*," recently delivered by Professor Flower, F.R.S., at the Royal Institution. I am glad to find that from craniometry Professor Flower arrives at results similar to those which I have reached from a study of the external and mental characteristics, the manners and customs, and the languages of these people. We all know that in such questions the convergence of different lines of research in the same point of agreement, adds immensely to the probability that what they agree on is correct. Professor Flower finds the crania of the black people in the western portion of the Pacific

* "*The Contemporary Review*," February, 1873.

to differ greatly from those of the brown people occupying the central and eastern islands; in fact, he believes them to be totally distinct. In some places, however, the crania obtained indicate more or less admixture between the races. This is what other lines of research indicate.

There are *three* divisions of the people marked by the three colours in the map. The *blue* colour in the west represents the *black Melanesians*; the *pink* in the eastern portion, including the Hawaiian Islands and New Zealand, represents the *brown Malayo-Polynesians*; the *purple*, chiefly north of the Equator, represents the *Micronesians*, a people differing in several respects from both of the other races. The *pink* bands running through groups in the Melanesian area indicate the admixture of that people with the Malayo-Polynesians, the proportion being roughly shown by the number of bands.

I.—THE MELANESIANS. These people were, without doubt, the earliest of the present occupants of the Pacific Islands. Probably we may regard them as the aboriginal inhabitants. Possibly they were more widely distributed in former times than they now are. I have not lived among these people, but I have visited some of the islands where they live, and have seen natives of Fiji, the Loyalty Islands, New Caledonia, and the New Hebrides, and have given a little attention to some of their languages. Everything I know about them indicates that they are essentially one people, modified in the various islands by the different circumstances which have affected them, and by more or less mixture with the brown people.

I am not prepared to pronounce a very definite opinion as to the affinities of the blacks of Polynesia with other peoples of the world. My studies in this direction have not been such as to warrant such an expression of opinion. But, considering that aboriginal black populations have been found in most of the continents and larger islands of the southern hemisphere, I should naturally expect to find more or less affinity between them all. As far as my reading has gone, it has tended to confirm this view. I certainly believe the blacks of Western Polynesia have close affinities with the Papuans of the Indian Archipelago. Probably they are remotely related to the people of Africa. In taking this view I am following, as you are aware, that of some of the most eminent comparative Ethnologists.

I will not attempt to say how these Melanesians came to occupy the islands in which they are now found. We have evidence as to the way in which the brown race may have spread, but none whatever as to how the earlier black race came to inhabit these remote and isolated positions. The brown

people are all navigators. This is not, however, the case with the blacks. Indeed, I have often thought wherever the blacks are found to be navigators there are indications that they have learnt the art from contact with the brown people. There is every reason to believe that these two races have come into contact with one another at various points in the Melanesian area. In many places there has plainly been a mixture of blood. But even where this is not the case, or where this mixture has taken place to only a slight extent, the habits and customs of each race may have been affected by their contact with one another.

We will now briefly run over the area occupied by this Melanesian race, and I will point out how far I believe the people to be mixed.

New Guinea is properly outside the region which this paper takes up, as I reckon that with the Indian Archipelago. But in passing it may be remarked that in the eastern peninsula of that island there seems to be a considerable admixture of races. The Rev. W. G. Lawes, who lived several years on Niuë, or Savage Island, in the Malayo-Polynesian area, and who has recently spent four years in this portion of New Guinea, has there found people resembling very closely the brown Polynesians. Evidence of this has been given in the excellent paper on the "Motu" of Port Moresby, by Dr. W. Y. Turner, which was read before the Institute last February.* And I hope Mr. Lawes, who is now in England, will soon give us further information on this point.

As far as we have information respecting the people of New Ireland, New Britain, and the neighbouring smaller islands, they seem to be pure Papuans or Melanesians. But we know at present very little about them, and further information may show them to be mixed. My experience in studying this subject has been that the more we have learnt about the people in this Melanesian area, the more evident it has become that they have some mixture of brown Polynesian blood. Hence I should speak with the utmost caution, and only provisionally, about purity of blood where our opinion is necessarily based chiefly on negative evidence.

I have no certain information which would indicate that the Solomon Islanders are mixed with the Malayo-Polynesians. But there are a few things which would, to my mind, furnish presumptive evidence that they are.† Some of these people

* See "Journal Anthro. Institute," vol. vii, p. 470.

† Since this paper was read, the Rev. J. Inglis, long resident as a missionary at Aneityum, in the New Hebrides, has informed me that the late Bishop Patteson told him he had no doubt but the Solomon Islanders were largely

are described as being fine large men—much larger than the blacks usually are. I have not visited these islands; but my knowledge of the people on other islands would lead me always to suspect a mixture of blood where the blacks are large in size. These Solomon Islanders are also good navigators, and build excellent large canoes. In this respect they are very different from the pure Melanesians.

Passing through the Santa Cruz and Banks Islands, where the testimony of the late Bishop Patteson is in favour of our regarding the people as mixed Melanesians, we come to the New Hebrides. Some of the inhabitants of this group may probably be regarded as pure and typical Melanesians. But in most of the islands the blacks have a strain of brown blood; and in at least four places pure Malayo-Polynesian colonies are found, viz., at Niuē, Futuna, Mel, and Fil. The two latter are small islands on the coast of Efat. These colonies keep themselves distinct from the blacks. And the difference between the two races is so great that it at once strikes the most casual observers. The names of two of the islands occupied by these colonies—Niuē and Futuna—may indicate the region whence they came; for these are the names of two islands between Fiji and Samoa.

Although these colonists keep themselves distinct from the blacks, it is highly probable that their presence would more or less affect the population around them. Black men generally like lighter-coloured wives. By fair means or foul some of these Melanesian men would probably gain possession of women belonging to the colonies. The blacks are more likely to become mixed in this way than the brown race. I have always found the lighter-coloured people to look down upon the blacks; and, as a rule, the brown men would not take black women for their wives except when they could not obtain any others.

In the Loyalty Islands there is some considerable mixture of the two races. On the island of Uvea there is a brown colony, and there the two people have kept somewhat distinct. They retain two languages, although they are, as would naturally be supposed to be the case on such a small island, a good deal mixed. The name Uvea or Uea seems to indicate the island whence the brown people came, viz., Uvea or Wallis Island, west of Samoa. When missionaries from Samoa first visited the other islands of the Loyalty Group, more than 20 years ago, they found some brown Polynesians living among the people. These had come from Tonga. I saw some of these Tonguese there in 1863, and again in 1870. They had lost their

mixed with the brown Polynesians, and especially in the eastern part of the group. November, 1878.

way at sea, and had been carried by the winds and current to the Loyalty Islands. In this way the population of these islands has doubtless been considerably modified from the pure Melanesian type. This is also the case on the neighbouring large island of New Caledonia.

On Rotuma there is also a mixture of the two races, although the Melanesian largely predominates. In fact it is probable that this island contains a mixture of the three peoples of Polynesia. The Rev. G. Turner, LL.D., mentions some people, probably from the Gilbert Islands, who were cast on that island.*

Coming now to Fiji we find the inhabitants considerably mixed, especially in the eastern portion of the islands. I have never felt inclined to adopt the view usually advocated to account for the mixture of races in this group, viz., that this was the last stage in the journey of the Malayo-Polynesians in their migration, before they broke up and spread over the eastern islands. Those who adopt this view think they made a considerable stay in Fiji, and hence the mixture of the people. Such a theory is extremely improbable, and it is altogether unnecessary in order to account for the present population of these islands.

It is well known that for a long time there has been frequent intercourse between the Tongan Islanders and the Fijians. It is on the eastern side of Fiji, nearest to Tonga, that the people are most mixed. Tongans have settled there, have exercised a great influence over, and have intermarried with the original Melanesian population. The population of some of the eastern islands appears to be nearly as much Tongan as Melanesian. Even many of the Fijians who appear to be pure Melanesians have probably some brown Polynesian blood in their veins. The people generally are much larger than the unmixed blacks are usually found to be. This, at any rate, is the case with the coastal tribes. I am not certain whether the mountain tribes are as large as those on the coast. We have adopted the Tongan form of the name for these islands; the original Viti being changed by them to Fitsi, and from that we have Fiji.

We have gone over all the islands where the Melanesian element in the population predominates. Although in some of these there is more or less brown Polynesian blood, the black element very largely exceeds the other; the brown element can be regarded as only infused. There are, however, some islands peopled by the brown race, where there appear to be traces of a Melanesian element in the population. This is the

* See "Nineteen Years in Polynesia," p. 359.

case in New Zealand. I think we have evidence which tends to show that there was an aboriginal black population in those islands previous to the arrival of the Maori. There is probably a little admixture of blood in Samoa, but it is very slight, and may doubtless be accounted for by connection with Fiji. I am strongly inclined to think there is a Melanesian element in the Marquesas Islands. My reasons for thinking so are very slight, and probably will fail to be convincing to others. The Marquesas Islanders are a very savage set of people, they appear to be broken up into hostile tribes, and are cannibals. Their language also differs in different parts of the group. Indeed, there are, if my information be correct, at least two different dialects there.

Now in these respects the Marquesas Islanders differ from most of the pure Malayo-Polynesians. When they were first discovered by Europeans these brown Polynesians were not a very savage people. Early navigators were generally well received by them. And all our subsequent intercourse with them has proved that they are not naturally a race of bloodthirsty savages. The unfortunate massacre of members of La Perouse's expedition in Samoa, and the killing of Captain Cook in Hawai'i do not disprove this. Such deeds were either the result of indiscretion, or something worse, on the part of their white visitors, or of a misunderstanding on the part of the natives. They were not the deeds of bloodthirsty, treacherous savages.

As a rule, these brown Polynesians were not cannibals. I very much doubt whether cannibalism can with any justice be regarded as one of their race characteristics. Where people belonging to the race indulged in this horrid custom, I believe it may be accounted for by exceptional circumstances. These may be (1), contact and admixture with the black race, which is always cannibal wherever it is found in Polynesia; (2), the result of hardship and want during long voyages, when the wretched people have been driven by sheer want to eat their companions, and have afterwards retained the habit thus contracted; or (3), the occasional indulgence of a spirit of revenge manifesting itself in biting or even eating a portion of a slain enemy.

Further, the brown Polynesians were not broken up into hostile tribes, having no intercourse with one another. On some islands they were often engaged in war with one another. But in the intervals between their wars, there was much communication between them. Their wars were between those who were generally friends; and after their differences had been settled by a fight, and by the killing of about an equal number of men on both sides, they would settle down again, and

amicably carry on their intercourse with one another until another cause of dispute arose. Owing in great part to this frequent intercourse between the people, we always have found one language to prevail in a whole group of islands.

The Marquesas is the only group peopled by the brown race in Polynesia where two very distinct dialects are found.

All of these characteristics which have been mentioned as not being usually found in the Malayo-Polynesian race are invariably found in the Melanesians:—viz., a savage, blood-thirsty disposition, the practice of cannibalism, the existence of hostile tribes in the same islands who have little or no intercourse with one another, and, as a consequence of this, the existence of different languages in one group of islands, or even on the same island. As these characteristics are found in the Marquesas Islanders, I am inclined to suspect a mixture of Melanesian blood in those people.

II.—THE MALAYO-POLYNESIANS. From what has already been said respecting the brown Polynesians, you will gather that I believe the ancestors of this race entered Polynesia subsequent to the occupation of many of the islands by the black race. It appears to me that there can be little doubt in the minds of those who have given attention to the subject as to the direction of their migration. They evidently went from the Indian Archipelago to the islands they now occupy. I believe we can, with at least great probability, trace them thus far, and show their relationship to the Malays still in that Archipelago, and also to the Malagasy of Madagascar. Whether they can be traced further I am not prepared to say. You are aware that, in a recently published book, a gentleman resident in the Hawaiian Islands—Mr. Fornander—has tried to show that these people have sprung from a pre-Malay race which once dwelt in the Indian Archipelago; and from thence he thinks he can trace them to Western Asia. This gentleman has also ventured to give the probable date of their migration across the Pacific.

I do not intend to examine here those views. Some of them appear to me to be very wild. I will merely say that, as far as my reading on the subject has gone, I have failed to meet with any evidence that the ancestors of the brown Polynesians were a people who occupied the Indian Archipelago before the ancestors of the present Malays arrived there. My own opinion is that the brown Polynesians and the Malays, and also the Malagasy, all sprung from the same stock, but I do not regard the Malays as representing that stock. Probably the Polynesians represent it more nearly than the Malays, for the latter have been more changed than the Polynesians. As

to the date of their separation I can say nothing, except that it doubtless was before the Malay or Javanese languages were affected by the Sanskrit. My faith in pre-historic chronology of every kind is very weak indeed; and I certainly cannot put much confidence in Polynesian chronology derived from legends and genealogies. Still, if we allow margin enough, we may, by a comparison of genealogies, arrive at what we may regard as approximate dates. Mr. Fornander thinks the great migration across the Pacific was made towards the close of the first, or early in the second century. I would like a little more evidence before adopting that date.

A difficulty is felt by many as to the possibility of such an eastward movement, directly against the prevailing trade winds and the usual currents. But it is well known to voyagers in the tropical regions of the Pacific that sometimes there are strong westerly winds blowing there; and also that occasionally there are strong currents setting from the west to the east. These are exceptional. But the probability is that, if the voyage were involuntary, the people would be more likely to be taken off their guard by exceptional winds and currents than by those which usually prevail. If, on the other hand, the people went of their own will—a vanquished tribe determining to seek a new home in the east—I imagine their canoes would lie close enough to the north-east trade wind to fetch the Samoan or Tongan Islands.

Probably they came down by the Solomon and New Hebrides Islands, but finding these occupied by the blacks, they were unable to effect a permanent settlement there. Then they went on until they found unoccupied islands, or some with a population so small that they were able to conquer them, and either occupy the islands conjointly with them, or entirely to destroy them.

We know these brown Polynesians were adventurous voyagers long before their islands were known to Europeans. It is certain that there was frequent intercourse between Tonga and Fiji, between Tonga and Samoa, and also between the Society Islands and Hawai'i. We have several recent well-authenticated instances of people being blown away and passing from the east towards the west. I knew a man who was drifted 1,200 miles in 1862, and who spent eight weeks on his journey. During my residence in Samoa, a boat with some labourers who had escaped from Tahiti, reached those islands. I have already mentioned some Tongans who were drifted to the Loyalty Islands, and whom I saw there in 1863 and 1870. In 1861, some natives of the Tokelau Islands were driven by adverse winds to Samoa, nearly due south. We have not, however,

such well-authenticated examples of people going from the west to the east, except in the North Pacific.

I have by me several accounts of Japanese junks having been driven across the North Pacific, some of which I shall particularly mention by-and-by in connection with the peopling of Micronesia. The best account of a boat from the west reaching Central Polynesia which I know is one obtained from Fotuna or Horne Island (lat. $14^{\circ} 48' S.$, and long. $178^{\circ} 18' W.$). The people now living on that island say, many years ago a large boat with about 40 people in it reached their shores. The natives attacked the crew, and in the fight many of them were killed. Others, however, were spared and allowed to land on the island, and form connections with the natives. The French Roman Catholic priest on the island, who is familiar with the story, says the party consisted of both men and women. These people taught the natives of the island to mark their bark cloth with peculiar patterns, which are at the present time found only in Fotuna and the neighbouring Uvea, or Wallis Island. I have been credibly informed by a gentleman who visited Fotuna and made inquiries on the subject, that drawings of the vessel in which these people arrived, and of various strange utensils and implements which they had with them, are still preserved on the island. It is said that the progeny of the strange people after a time becoming numerous, the pure natives feared they would outnumber them and acquire supremacy over the island, and that in consequence of this fear they killed them nearly all off.

The French priest and the gentleman who gave the information to me, believe these people were either Japanese or Chinese. I never visited Fotuna myself, and therefore can only give the story as I have received it. But it is probably not too late yet to obtain more certain knowledge on the subject from the island; and perhaps the original drawings said to exist (or at least copies of them), might be obtained. I commend the matter to the attention of some gentleman who may be intending to take a yachting cruise through the Pacific.

I think there is every reason to believe that story is, in the main, trustworthy. The killing off of most of the people, and so diluting the foreign blood mixed with the natives could be paralleled by at least one other case which I know of; and it would be a very likely thing for the pure natives to do under the circumstances. It appears to me highly probable that this vessel may have gone from the neighbourhood of the Philippine Islands. And in Fotuna it reached the neighbourhood of Samoa and Tonga, whence it is most likely the Malayo-Polynesians spread abroad to the various groups they now occupy. It

appears to me that a good deal may be said in favour of Samoa having been one of the earliest, if not the first, permanent settlement of these people in Central or Eastern Polynesia. The traditions of many islands point to Samoa as the place to which the inhabitants directly trace their origin.

In his "Myths and Songs from the South Pacific," Mr. Gill tells us (p. 25) the Karika family of Rarotonga expressly state that their ancestors came from Manu'a—the most easterly cluster of islands in Samoa. This, you will see, makes them to have gone in a south-easterly direction.

You are aware that the traditions of nearly all the brown Polynesians and of the Maories, speak of Avai'i, Hawai'i, or Hawaiki, as the original home of their ancestors. These names are found as the names of the largest island of Samoa, and of the Sandwich Islands—under the forms of Savai'i, and Hawai'i. Still it appears to me doubtful whether the Samoan Savai'i is the Hawaiki and Avai'i of tradition. And it is not upon this name that I rest for evidence that Samoa is probably the centre whence most of the other islanders have reached their present places of abode. The traditions of many mention Samoa (generally as Hamoa or Amoa, they being unable to pronounce the S), or some of the islands of the group by name as the place whence their fathers migrated.

Some of the migrations from Samoa are comparatively recent: for example, that of the Ellice Islanders. These people evidently went thence only a few generations ago. The island from which they went may with great probability be determined by the family names borne by some of them. The staff of the chief of the migrating party is still in existence. This staff was given to my brother-in-law, the Rev. G. A. Turner, M.D., of the Samoan Mission, four or five years ago. It is a long staff such as is always used in Samoa by orators when they stand in the *malae*, or place of public assembly, to make a speech. These staves are handed down from generation to generation as a valuable heirloom. They frequently bear the names of great orators who belonged to the respective families. The wood of which this Ellice Island staff was made does not grow in those islands, but is a Samoan wood. As the original wood decayed, it has been patched with other wood indigenous to the Ellice Islands. The traditions of these people record the arrival of two distinct parties from Samoa, one a considerable time after the other.

All the brown Polynesians occupying the islands coloured pink in the map, resemble one another to a remarkable degree, considering the wide area over which they are found, and their consequent isolation from one another. The differences in their

languages are also much fewer than we should naturally have expected them to be, when we consider the long time which must have passed since the people were separated. Still, these differences are greater than they are popularly supposed to be. I have recently prepared a brief sketch of the principal characteristics of these languages for the Philological Society, which has been printed in that Society's Journal. It will not therefore be necessary to say anything here on that subject. Those interested in it can see the paper mentioned.*

III.—THE MICRONESIANS. These people occupy the Caroline, Marshall, and Gilbert Archipelagoes. They differ considerably from both of the other races of Polynesians, and they differ somewhat among one another. I have seen natives from all three of the above-named archipelagoes, although I have visited only the Gilbert group. Some Caroline Islanders who were taken to Samoa to labour on a plantation there, differed in several respects from the Marshall and Gilbert Islanders. They had less stamina in their constitutions than the others. The Caroline Islanders died off very rapidly, while the others stood the work and change of food very well. All of these people are of a light colour; but the Caroline Islanders I saw were more yellow in complexion, while the Gilbert and Marshall Islanders are darker than most of the brown Polynesians. The hair of all is straight and black, and they have little or no beard. In size they are smaller than the brown Polynesians. Some of the Caroline Islanders, however, were of a good size—rather tall and moderately stout; but the people of the other two groups are decidedly small, and of a very spare habit of body.

When I commenced collecting material for a comparative Grammar and Dictionary of the Polynesian languages, I thought those of these people were near enough to those of the brown Polynesians to be grouped together with them. But I soon found them to be very different, and that they form a different family of the Polynesian tongues.

Our information is not sufficiently full to warrant us in speaking positively as to the affinities of these Micronesians with other peoples. The traditions of the Gilbert Islanders indicate that those islands were peopled both from the west and the east. Those who arrived from the east are said to have been from Samoa; those from the west were probably from the Caroline Islands. These greatly predominated over those from the east, and it is probable from the traditions that most of those from Samoa were destroyed. There are traditions of the arrival of other strangers at some of these islands; and it is possible

* *Transactions*, &c., 1877-9.

—perhaps probable—that Chinese and Japanese junks have been cast upon the islands, and that in this way the original population may have been mixed.

My own opinion respecting these people generally is that the bulk of their ancestors came from the Philippine Islands or some other portion of the Indian Archipelago at a period much later than that at which the migration of the brown Polynesians across the South Pacific took place. But they have become mixed with people who have reached those islands from other localities, viz.: from China and Japan, from the brown Polynesian area, and possibly also from the Melanesian region. I have formed this opinion not only from the traditions of the people, and from their physical characteristics, but also from a few things in their languages. We need, however, much more information respecting these Micronesians before we can speak with confidence respecting their exact relations to these other races.

I have mentioned China and Japan among the probable sources whence people have reached Micronesia. It would not be a very remarkable thing if Chinese junks were blown out of their course and taken across to these islands. Indeed, it would be one of the most natural things to expect. But it may be thought extremely unlikely that any Japanese vessels should be taken there. There are, however, several well-authenticated instances of Japanese junks, with living people in them, having been found in various parts of the North Pacific, and to me there appears to be no reason why some may not have reached Micronesia.

In 1814 the British brig "Forester" was cruising off Santa Barbara in California (about lat. 30 N.) when a Japanese junk was met with. It contained three living men, and there were fourteen dead bodies on board. The three who were rescued recovered from their weakness. In December, 1832, a Japanese junk arrived at the Hawaiian Islands. The crew had originally consisted of nine persons. Of these four were living. They declared they had been 10 or 11 months at sea. Their junk was bound from one of the southern islands of Japan to Yeddo, laden with fish, when they encountered a typhoon which drove them out of their course. Their water-vessels contained a supply for only three weeks. When that was exhausted they had only the water they could catch when it rained to supply their wants.

These junks crossed the Pacific much farther north than the Micronesian Islands. But if it be possible for them to cross there, it is also possible for them to go farther south; and vessels running south-east would be very likely to reach one or

other of these islands, which stretch a great distance across the Pacific.

The only island outside the Micronesian area occupied by this people is Nui, in the Ellice group. The people living there say they came from the Gilbert Islands because they were wearied with the wars constantly raging there: that doubtless means that they were defeated and escaped from their conquerors. Going south, they reached Nui and settled there. Their language is the same as that spoken in the Gilbert Islands, with a few verbal differences. At the present time these people form a very flourishing community, much in advance of any of the Gilbert Islanders. I visited their island some years ago and was greatly pleased with what I saw there. All the people are nominal Christians and are advancing in civilisation. Statistics taken during twelve years show the population to be increasing. Under the instruction of their Christian teacher, who is a native of Samoa, they are being very rapidly elevated in every respect.

I intended to discuss the probable future of the Polynesian people. But having already made this paper longer than I at first thought would be needful, I must reserve my remarks on this subject for another occasion. Suffice it to say that I have great hope of the continuance of many of these people; and I believe I could show that, under the influence of a Christian civilisation, they may be raised to occupy a respectable and useful position among the peoples of the world.

DISCUSSION.

Professor FLOWER pointed out how completely Mr. Whitmee's observations on the two principal races of the islands of the Pacific and their distribution accorded with those of Captain Cook, who exactly a hundred years ago first systematically investigated their ethnology. In the words of Forster, who accompanied Cook as naturalist, on his second voyage, "We observed two great varieties of people in the South Seas—the one more fair, well-limbed, athletic, of fine size, of a kind, benevolent temper; the other, blacker, the hair just beginning to become woolly and crisp, the body more slender and low, and their temper, if possible, more brisk, but somewhat mistrustful. The first race inhabits Otaheite and the Society Isles, the Marquesas, the Friendly Isles, Easter Isle, and New Zealand; whilst the second peoples New Caledonia, Tanna, and the New Hebrides, especially Mallicollo."

Anatomical observations upon crania, though still insufficient from want of material, perfectly corroborate this view. Skulls of the two races when pure present the greatest possible contrast; the first or true Polynesians are brachycephalic, straight-faced, narrow-

nosed, and with round orbits; those of the second race (Melane-
sians) are dolichocephalic, prognathous, broad-nosed, and with low
orbits. Undoubtedly there is a great mixture of the two races in
many of the islands—a mixture which is taking place at a con-
stantly accelerating speed. All information as to their exact limits
where pure, and to the proportions in which they are blended in
other regions, is of great value, and no time should be lost in
collecting it. Professor Flower inquired how far Mr. Whitmee's
observations confirmed the views of Hale and Quatrefages on the
migrations of the Polynesians?

On PALÆOLITHIC IMPLEMENTS from the VALLEY of the LEA.
By WORTHINGTON G. SMITH, F.L.S., &c.

THE first discovered implement of Palæolithic age belonging to
the gravels of north-east London was found by Mr. G. H.
Gaviller in gravel dug on Hackney Downs in 1866. It is an
ovate implement about four inches long. Later on, in 1868,
Mr. Norman Evans picked up a knife-like or scraper-like
instrument, nearly five inches long, in a gravel pit near
Highbury New Park; both these objects are described and
illustrated by Mr. Evans in his book on the "Ancient Stone
Implements of Great Britain," pp. 523, 525. Still later a rude
pointed implement was found in Dunlace Road, Lower Clapton,
and presented to the Geological Museum in Jermyn Street by
Mr. Anscombe.

The Highbury and Lower Clapton positions are two miles
apart from west to east, and the Hackney Downs position is
exactly intermediate. I am not aware of the finding of any
other implements than the three just mentioned in north-east
London, till my discoveries made during the present year. My
work has been principally confined to Shacklewell (half a mile
north-west of Hackney Downs) and Upper and Lower Clapton;
both the latter positions being in close proximity with the River
Lea. Bones and tusks of large size have at different times been
dug up in various neighbouring localities, once near De Beauvoir
Square, a mile south of Hackney Downs.

I will take the Shacklewell position first, where the surface
is 85 feet above the sea level, the pits being near the north-east
corner of West Hackney Church, and less than 300 yards west of
the Old Hackney Brook, which is now obliterated. The gravels of
this place have been completely described by Messrs. Prestwich
and Evans, so that I need only say in reference to them that
the gravel and sand vary greatly in thickness and disposition

in different positions, so that a section seen in one pit seldom accords with a section seen in another, even though the two pits may be closely neighbouring ones. Freshwater shells as *Unio*, *Corbicula* and *Hydrobia* are generally abundant (though sometimes quite absent) in the Shacklewell sand, and though these shells are very thin and fragile they are commonly found unbroken. Bones of mammalia also occur chiefly in the lower sands or resting upon the London clay. On my first visit to the spot one of the labourers (observing me to be looking over the sand and gravel) asked me if I was looking for bones, as he had recently found some large bones at the bottom of a pit (at that time the pit was filled in and built over);—these bones the man offered to give me, and he went to the place in the field where he had recently placed them, but on reaching the spot the bones were not there. Close by, the contents of numerous dust-bins had been discharged as foundations for new villas, and a large number of vagrants were searching amongst the rubbish for bones and pieces of iron and wood, so that the relics of the extinct animals were no doubt gathered up and sold for “old bones.” The labourers said they would soon be down to the London clay again, in a large and deep pit which I then saw open. After a fortnight I went again to the place, and the men had gone, the pit had been dug out to its lowest depth, filled up with the usual decaying refuse, and upon the exact spot previously occupied by the pit there were four new villas built up to the ground floor.

I found several flint flakes of Palæolithic age *in situ* in these pits, and in a heap of gravel just excavated from a pit close to the rear of the chapel (near Shacklewell Church) I found a massive and rudely chipped butt-end of a pointed implement five inches long, four inches broad, and two and a quarter inches thick—weight, $1\frac{3}{4}$ lbs. Previous to my visit the gravel from these pits had been spread over various roads in the district, and these roads produced three implements, weighing 1 lb. $3\frac{1}{2}$ oz. good characteristic flakes, weight of one $12\frac{1}{2}$ oz., cores, and fragments of worked flint.

The position at Upper Clapton, where I have found a considerable number of flakes, and one well-made pointed implement, is 350 yards east of Abney Park Cemetery, and 150 yards north of the position once occupied by the Hackney Brook. Here there is a coating of river gravel on the surface from a few inches to about three feet in thickness; sometimes the gravel is capped with a layer of brick-earth, varying in thickness from a few inches to two feet. In other places the London clay comes to the surface. The ground falls more than 50 feet in 600 in the direction of the river Lea, the western point of the position

being 107 feet above high-water mark, whilst the eastern point is only 49. Building operations are going briskly on here, and the builders utilise what little gravel there is to the utmost advantage, so that the excavation for this material is in many places less than a foot in depth. In gravel just removed from one of these shallow places on the south side of Cazenove Road, I picked up a good and perfect pointed implement and several characteristic flakes. The gravel distributed over the roads in the same district furnished several good flakes, many spalls, and a few large cores.

The position at Lower Clapton is one mile east from Hackney Downs, and the level is the same with Shacklewell and Hackney. Several pits have been dug for gravel in this place, but the two larger ones only remain open. They are east of, and close to, the building recently erected by the School Board, and they are half-a-mile south of a sudden bend in the Lea, and three-quarters of a mile north of the bed of the now obliterated Hackney Brook. The gravel here is very similar in general *facies* with the Shacklewell gravel, but I have never seen shells in the Lower Clapton sand. This latter position has produced more implements, flakes, and cores than Upper Clapton or Shacklewell, and I am disposed to think that most of the worked flints come from a thin deep-red seam of gravel, which is commonly about 10 feet beneath the surface; at any rate I have found implements and flakes *in situ* in this stratum in all the localities.*

At Craven Park, one and three-quarter miles north of Hackney Downs, at Tottenham Cross, two miles north of the same place, at Lower Edmonton, three and a-half miles further north, I have found several flakes and spalls in the newly excavated gravels, but no implements. Going still further north, and close to Waltham Station, half-a-mile west of the Lea, and $11\frac{1}{2}$ miles from London, gravel has recently been dug from two pits and distributed over some new roads in the neighbourhood. In this material I have found several flakes, spalls, and cores. At Flamstead End, north of Cheshunt, one mile west of the Lea, and $13\frac{1}{2}$ miles from London, there is a very large

* During the year 1878 I have found in the pits and roads about Lower Clapton ten perfect pointed implements, three broken ones of the pointed type, a large knife-like, well-worked flake weighing 11 oz., and at least 100 flakes large and small, and more or less worked. The largest and most massive instrument from Lower Clapton weighs 2 lbs. $3\frac{1}{2}$ oz., the lightest, made from a piece of tabular flint and worked on both sides, weighs less than 4 oz. Two flakes are remarkable; one, beautifully worked, $2\frac{1}{4}$ inches long and $1\frac{1}{4}$ inches broad, weighs only $\frac{1}{3}$ ths of an ounce, whilst the second, which is 4 inches long, $2\frac{1}{4}$ broad and with a large cone of percussion on the plain side, weighs only $3\frac{1}{2}$ oz.: this beautiful example is worked to an implement-like form and is so thin that when held up to a strong light it is transparent throughout.

gravel-pit now open, just behind the "White Horse" Inn. The gravel here appears to be identical with that of Shacklewell, and it abounds with fragments of worked flint. One of the excavated heaps yielded a very large flake with a good cone of percussion. A prolonged and careful search over the entire exposed surface of the gravel as seen in section, produced several worked fragments and a good and carefully-worked flake which had dropped to the base of the section. I was moreover fortunate enough to see two large and well-worked flakes *in situ*. They were resting under five feet of gravel, and were firmly embedded in a position where there was no sand. I detected their presence by seeing the projecting worked edges; the two flakes were close together. From Cheshunt I went to Hoddesdon, 17 miles from London, and a mile west of the Lea, where there are two pits, and from Hoddesdon to Amwell, 19 miles from London, and half-a-mile west of the Lea, where there is a very large pit; the result was not good, as I only met with one flake and a few spalls and fragments at the latter place.

Whilst returning home on May 31st, through Finsbury Park, I observed a load of gravel being shot into the Queen's Road, and on looking over the heap I picked up the butt-end of a pointed implement. A few days previous to this I had picked up a well-made pointed implement a little to the north-east of the Queen's Road locality. On making inquiries of the carter as to where the gravel came from, he said from Hertford, by the Great Northern Railway. On the 4th June, I picked up an excellently-worked flake near the Seven Sisters Station, close to Tottenham on the Great Eastern Railway, and further search was rewarded by another broken implement, several other flakes—one worked to an implement-like form—and a few spalls, cores, &c. On inquiry of the builder's foreman as to where the gravel came from, he said it was brought from Hertford in barges down the Lea. I now inquired of the station-master on the Great Northern Railway at Hertford as to where the gravel was brought from which was despatched to London, and he kindly gave me references to three large pits: two close to and north of the Lea and Hertford, and on either side of the Beane River, and another at Bengoe, between Hertford and Ware, and half a mile north of a bend in the Lea. At the wharfs on the Lea in London I got similar information, and secured a reference to another large pit a mile north-west of Ware and the Lea. I visited all these gravels which are about 130 and 140 feet above the sea level, and reputed to be of middle-glacial character, the lower gravels principally south of the Lea being fluvatile. I also visited a few smaller pits in the neighbourhood, but I got very little in the way of worked flints from any of them; frag-

CEPHALIC INDEX.

The skull is classified as

DOLICHOCEPHALIC if below 75 to 100

MESOCEPHALIC if from 75 to 80 "

BRACHYCEPHALIC if above 80 "

GNATHIC INDEX

ORTHOGNATHOUS if under 95 to 100

PROGNATHOUS if over 102 "

PLATYRHINE if 95 to 102 "

NASAL INDEX

LEPTORHINE if under 48 to 100

MESORHINE if from 48 to 52 "

PLATYRHINE if 52 to 58 "

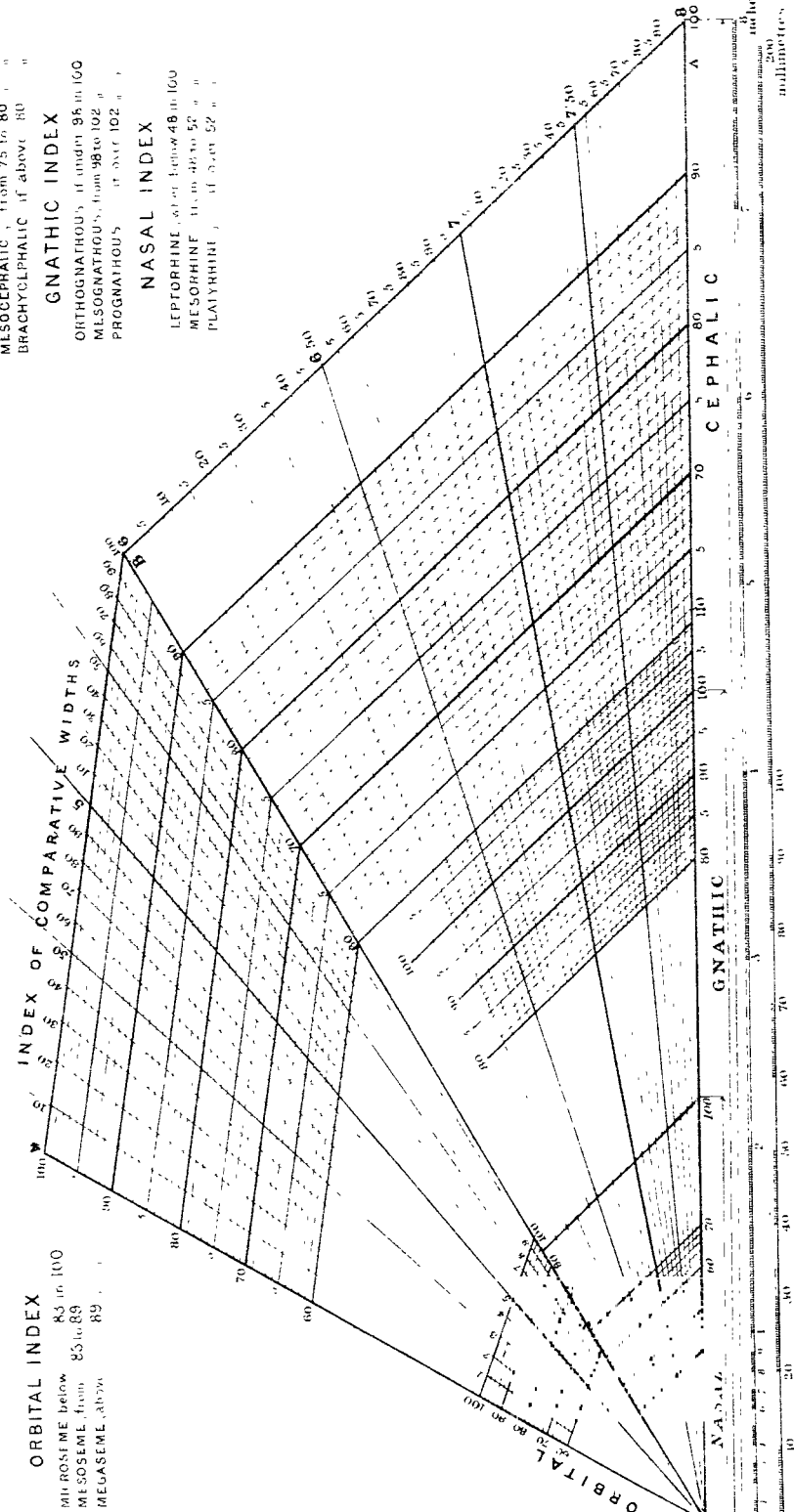
INDEX OF COMPARATIVE WIDTHS

ORBITAL INDEX

MIOROSOME below 83 to 100

MESOSOME from 85 to 89

MEGASOME above 89



SCALE TO FIND CRANIAL INDICES.

M. A. K. on. Inv. 11 Delt. 1878

ments undoubtedly worked by hand, I certainly found, and I was also able to confirm the correctness of the information I had received as to the identity of the gravels with the implement-bearing material brought to London and widely distributed over the roads near Finsbury Park; I have therefore found implements and flakes in the Lea Valley from London to Hertford. Further north, at Bishops Stortford and Pesterford Bridge in the Valley of the Stort, which river joins the Lea at Hertford, Mr. Evans has recorded ("Ancient Stone Implements of Great Britain," p. 530) the finding of two implements by Mr. W. H. Penning; this discovery, linked to mine, carries an implement-bearing valley from London to more than 34 miles north. But in a pit, however large it may be, a great surface of gravel is seldom exhibited, a single newly-gravelled road well washed by rain is better than the best pit. I have lately examined at least 20 newly-gravelled roads, walking down each road in different directions from 5 to 10 or 20 times. In comparison with the tens of thousands of unworked flints, the worked ones are uncommonly rare, and as a rule I have found only one satisfactorily worked flint in a four or five hours' walk over the gravels, so that the mere examination of half-a-dozen implement-bearing pits without a very satisfactory result, is only what must be reasonably looked for.

In conclusion, I think it would be well for Archæologists to notice, collect, and arrange with great care the *rougher and ruder* palæolithic instruments, for possibly it is from these ruder objects (often made by a few well-directed blows) that we shall eventually learn something satisfactory of the ways of the men who made and used the instruments. It is only reasonable to suppose that ornate and elaborate implements were less often made than rough and unfinished ones; the first would require a man of culture and skill, with time upon his hands, the second could be made in a moment or two by the merest savage. Any rough work would speedily damage and destroy some of the beautiful and highly wrought implements; it therefore seems more probable that a greater variety will eventually be found in the rougher implements which were speedily made for instant daily use and as speedily discarded.

On a Scale to find CRANIAL INDICES.

By GEORGE M. ATKINSON, Esq.

I have pleasure in submitting a scale constructed to show quickly a method for finding the relative decimal fraction

between the diameters of skulls, *i.e.*, the cephalic and other indices, which are indicated by a numerical expression.

First, to construct the cephalic, or latitudinal, index scale. Take a line, say 8 inches long, A; divide it into 100 equal parts; this I suppose to be the longest measure I shall require. I draw another line, 6 inches long, B; making an angle of about 30° with this line. This I consider the length of the shortest skull I shall require to measure. Join the extremities of these lines and form the triangle, OAB. (*See Plate.*)

I cut the base line, AB, from the apex or centre, O; in points at distances increasing from 6 inches, successively one-tenth of an inch (or any distance found convenient); and I draw lines radiating from the O point to those divisions, the lines thus somewhat resembling a fan. From the different 100 points or divisions set off on the first line, OA, draw lines parallel to the base. These will cut each radiating line into 100 equal parts, by the well-known problem of similar triangles.

To use the scale and find the cephalic index. Measure with callipers the long diameter, from the ophryon, or centre of supra-orbital line, to the most distant part of the occiput; and set it off on the scale from the point O, to cut the base of the triangle. The point of intersection is the standard, and is divided into 100 parts. Take the short diameter, the greatest breadth in the parietal region, with the callipers, and place it upon the same line. I find it gives me (perhaps) a distance reaching 80. This in an instant gives me the fraction of 80 to 100, and I can classify the skull as long or short.

The altitudinal index (the ratio of height to length, the latter being as before found—100) is determined by taking the distance from basion or anterior margin of foramen magnum to the bregma, or junction of the coronal and sagittal sutures. This length, if applied from the O point, on the already obtained scale line, will enable me to determine this fraction. Practically we seldom require to find a fraction under 60: therefore the rest of the triangle is available for the construction on the same principle of a method for finding the Gnathic index.

For facility of division I use the line drawn from the O point, to the point 7.10 on the base line AB, and upon it set off, from the apex O, a distance equal to 10 centimetres, and divide it into 100 equal parts; on the line drawn through this "100" point, parallel to the base line AB: the basi-nasal length from O point is applied for indexing. But as many skulls are prognathous, it is necessary to extend the divisions or units to perhaps 115 parts; I stop at the line marking the 60 part of the cephalic index, and complete this scale by drawing through the

different divisions (beginning at 80) lines parallel to the index line and continuing to the 108 division.

Should the length from the basion to the alveolar point exceed the divisions given on the scale, we can determine the relation, by taking from the already found indexed "100," point on the index line; the distance to the point of the basi-alveolar length measured off, and, with the compass reversing it on the same scale line. We can ascertain, by counting over the distance backwards, the number of units; which number, plus 100, will express the fraction showing the degree of prognathism.

As the extreme measurements on this scale are not long, it is not necessary to continue the lines up beyond the radiating line from O to 6·30.

On the remaining unoccupied portion of the triangle, the nasal index scale can be placed, and for facility of division I take my 100, distance point equal to 50 millimetres (the average height of the nasal aperture measured from the nasion or centre of the fronto-nasal suture to the lower border of the aperture or base of the nasal spine), on the line drawn radiating from O to point 7, drawing a line through it parallel to the base AB, and extended to cut the lines forming the sides of the triangle; on this line the nasal height from O, is measured.

As the width of the nasal aperture to the height determines the index for classification, the line drawn parallel to the base at the 50 divisional unit point will be the index line; and lines drawn parallel, through the divisions marked from Nos. 40 to 70, will be all that are required to complete this scale.

The orbital index is constructed in a similar manner, but I find it advisable to use a small second triangle, the sides being respectively equal to the length of the longest and shortest orbit I am likely to measure, dividing them into 100 equal parts and using the base and the O point for radial lines 1, 2, 3, 4, 5, 6, 7, 8, 9, and proceeding as explained in the cephalic index.

The scale for determining the comparative widths of the skull can be added, and as the measurements generally fall between 4 and 6 inches, I utilize the side B of the cephalic scale already divided into 100 equal parts, and produce the side of the small triangle used for the orbital index scale, marking it off 4 inches long. By joining the extremities of these lines, and proceeding in a similar manner to what has been before explained when constructing the cephalic index, we get a scale that will enable us to determine the comparative widths of the skull; the greater width, between the parietal eminences, being reckoned as 100.

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In some races, the width between the zygomatic arches

measures more than that between the parietal bones. In which case produce the (parietal) 100, width, scale line; and mark off on it the zygomatic length; then measuring from the indexed "100," point outward to the overplus of the zygomatic arches, and reversing from the indexed point, the compass open at this distance on the same scale line, we can count the number to add to 100, and enable us to express the relative proportionate fraction.

This scale can be used as a cephalic scale, for measuring the skulls of children.

Indices for measuring the palate, pelvis, &c., can be constructed by a similar process.

DISCUSSION.

Professor Flower thought that Mr. Atkinson's ingenious method of finding indices would be of much greater use if it could be so modified as to be applicable to all indices used by craniologists, and that it would be better to adapt it to the metrical system of measurement than to English inches, as the former was so much more generally used, and would ere long, he thought, become universal.

Acting on this suggestion a scale 200 millimetres long is given on the plate.

NOVEMBER 12TH, 1878.

JOHN EVANS, Esq., D.C.L., F.R.S., President, in the Chair.

The minutes of the previous meeting were read and confirmed.

The following new members were announced—M. J. GABRIEL, Esq., and G. H. RADFORD, Esq.

The following presents to the Library were announced, and thanks were ordered to be returned to the respective donors for the same:—

FOR THE LIBRARY.

From the ACADEMY.—Proceedings and Transactions of the Cracow Academy of Science. Vols. III and IV.

From the ACADEMY.—Atti della R. Accademia dei Lincei, Vol. II, Nos. 6 and 7; (Memoire). Vol. I, Part 1 and 2; (Transunti). Vol. I.

- From the SOCIETY.—Journal of the Asiatic Society of Bengal. Vol. XLVI, Part 1, Nos. 2—4; Part 2, No. 3; Vol. XLVII, Part 1, No. 1; Part 2, Nos. 1, 2, and 4. Proceedings ditto, Nos. 7—10, 1877; Nos. 1—6, 1878.
- From the ACADEMY.—Proceedings of the Davenport Academy of Natural Sciences. Vol. II, Part 1.
- From the COMMISSION.—Compte-rendu de la Commission Impériale Archéologique pour l'année 1875. Avec un atlas.
- From the SOCIETY.—Proceedings of the Royal Geographical Society. Vol. XXII, Nos. 4—6; Journal ditto, Vol. XLVII.
- From the ACADEMY.—Bulletin de l'Académie Impériale des Sciences de St. Petersburg. Vol. XXV, Nos. 1 and 2.
- From the AUTHOR.—Apuntes sobre las Tierras Patagonicas. By Francisco P. Moreno.
- From the BERLIN ANTHROPOLOGICAL SOCIETY.—Zeitschrift für Ethnologie. Nos. 2 and 3, 1878.
- From the SOCIETY.—Transactions of the Society of Biblical Archaeology. Vol. VI, Part 1.
- From Dr. PAUL BROCA.—Revue d'Anthropologie. Nos. 3 and 4, 1873.
- From the MANX SOCIETY.—Records of St. Mark's Chapel.
- From the AUTHOR.—The Native Races of the Pacific Ocean. By Prof. W. H. Flower, F.R.S.
- From the INSTITUTE.—The Canadian Journal. Vol. XV, No. 7.
- From the SOCIETY.—Journal of the Royal Asiatic Society of Great Britain and Ireland. Vol. X, Part 3.
- From the SOCIETY.—Proceedings of the Society of Antiquaries of London. Vol. VII, No. 4.
- From the INSTITUTION.—Journal of the Royal United Service Institution. Vol. XXII, No. 96.
- From the INSTITUTE.—Report of Proceedings of the Royal Colonial Institute. Vol. IX.
- From the SOCIETY.—Proceedings of the Royal Society. Vol. XXVII, Nos. 188 and 189.
- From the INSTITUTION.—Journal of the Royal Institution of Cornwall. No. 19, Part 2.
- From the INSTITUTE.—Transactions and Proceedings of the New Zealand Institute. Vol. X.
- From the ACADEMY.—Bulletin de l'Académie Royale de Copenhagen. No. 3, 1876-7.
- From the SOCIETY.—Bulletin de la Société Impériale des Naturalistes de Moscow. No. 1, 1878.
- From the EDITOR.—Archiv für Anthropologie. June, 1878.
- From the SOCIETY.—Jahrbuch der K.K. Geologischen Reichsanstalt. Vol. XXVIII, Nos. 1 and 2; Verhandlungen ditto—Vol. XXVIII. Nos. 1—10, 1878.
- From the SOCIETY.—Mittheilungen der Anthropologischen Gesellschaft in Wien. Vol. VIII, Nos. 1—4.
- From the CLUB.—Proceedings of the Berwickshire Naturalists' Club. Vol. VIII, No. 2.

- From the CONGRESS.—Transactions of the International Medical Congress, Philadelphia, 1876.
- From the INDIA OFFICE.—A Memoir on the Indian Surveys 2nd edition. By Clements R. Markham, C.B., F.R.S.
- From the ASSOCIATION.—Journal of the Royal Historical and Archæological Association of Ireland. Vol. IV, Nos. 33 and 34.
- From the SOCIETY.—Transactions of the Asiatic Society of Japan. Vol. VI, Part 1.
- From W. L. STONE, Esq.—The Magazine of American History, for September, 1878.
- From the AUTHOR.—Étude sur les Crânes boughis et dayaks du Museum d'Histoire Naturelle. By Dr. Montano.
- From the SOCIETY.—Bulletin de la Société d'Anthropologie de Paris. Vol. I (3 series), No. 2.
- From the SOCIETY.—Proceedings of the Philosophical Society of Glasgow. Vol. X, No. 1.
- From the AUTHOR.—The Geology of Ireland. By G. H. Kinahan, M.R.I.A.
- From the SOCIETY.—Proceedings of the American Philosophical Society. Vol. XVII, No. 101; Catalogue of Library, ditto, Part 3.
- From the SOCIETY.—Transactions of the Royal Society of Literature. Vol. XI, Part 3.
- From Prof. F. V. HAYDEN.—Bibliography of North American Invertebrate Palæontology.
- From the AUTHOR.—The Method of Manufacture of Several Articles by the former Indians of Southern California. By Paul Schumacher.
- From W. L. DISTANT, Esq.—Recherches expérimentales sur les Variations de Volume du Crâne; Céphalomètre de Poche ou compas des Coordonnées; Recherches expérimentales sur l'inégalité des régions correspondantes du Crâne. By Dr. Gustave le Bon.
- From the AUTHOR.—On the Mineralogy of Nevada; Notes on Zoology; List of Mammals found in the vicinity of Grand River, D.T.; Ancient Hearths and Modern Indian Remains in the Missouri Valley; General notes on Anthropology. By Dr. W. J. Hoffman.
- From the AUTHOR.—Studi Antropologici intorno ad uno Scheletro di accinese; Saggio di Aleuni studi intorno ai crani della toscana. By Dr. Paolo Riccardi.
- From the AUTHOR.—Il Terzo Molare Nelle Razze Umane ricerche. By Prof. P. Mantegazza.
- From the AUTHOR.—Notes on a Collection from the Ancient Cemetery at the Bay of Chacota, Peru. By John H. Blake.
- From the ASSOCIATION.—Report and Transactions of the Devonshire Association. Vol. X.
- From G. G. RUTHERFORD Esq.—Album der Deutschen Gesellschaft zur Erforschung Aequatorial-Afrikas.

From the EDITOR.—*Revue Internationale des Sciences.* Nos. 28—45, 1878.

From the EDITOR.—*Revue Scientifique.* Nos. 1—19, 1878.

From the EDITOR.—“*Nature*” (to date).

Mr. ROBERT CUST read the following :

REPORT on ANTHROPOLOGICAL PROCEEDINGS at the ORIENTAL
CONGRESS held at FLORENCE, September 12–18, 1878.

The Society has done me the honour of making me for the second time their delegate at an Oriental Congress. I regret that on my return from St. Petersburg, in 1876, I did not express my readiness to communicate any interesting points which had been discussed there ; in fact, I awaited the arrival of the printed Report of the Proceedings, as the greatest portion of the discussions took place in Russian, was not interpreted at the time, and to this day no Report has been published ; although Messrs. Brill, of Leiden, assure me that one will be published in the first days of January, 1879.

Warned by the past, I came before your Society on this occasion with an immediate, though perhaps imperfect, report of some of the interesting topics discussed at Florence in the month of September. I am assured by your Director that Philology is clearly recognised as a branch of your science. The familiar languages of Italian, French, and German, and the assistance of the “*Bulletino*,” published within a week of the close of the Congress, have enabled me to speak with some degree of certainty of the nature of the topics, though I am unable to supply the details and the arguments.

The pages of the *Times*, the *Athenæum*, and the *Academy*, will have informed you of the general outline of the proceedings of the Congress. It was attended by the greatest Oriental scholars of Europe, exceeding 100 in number, with some notable exceptions. Great harmony prevailed, and the only regret was that the time was too short for the work to be done.

The Congress was divided into seven sections, meeting separately and, by the necessity of the case, at the same hour in some instances ; therefore no person could be present at all the meetings. Some scholars were satisfied with their own section ; I should have liked to have attended all.

The sections were :—

- I. Egyptology and North Africa, or Chamitic.
- II. Ancient Semitic, or Assyrian and Hebrew.

- III. Modern Semitic, or Arabic of the Mohamedans.
- IV. Indo-European and Iranic.
- V. Indian.
- VI. Altaic.
- VII. Chinese, Japanese, and Indo-Chinese.

This grouping was not based on scientific considerations, neither was it exhaustive, but it suited the convenience of this particular Congress, which had to adjust its subdivisions to the requirements of the scholars present, and the number of communications sent in. In the elections of presidents, vice-presidents, and secretaries of sections, national and personal considerations had to be kept in view, for, while it was just and proper that there should be an Italian in the bureau of every section, it was not desirable to let any one nation get a preponderance in any section. On the whole, a very satisfactory cast was made.

In the first section an interesting fact was stated by M. Mashero and Professor Sapeto: that in the speech of some of the Negro tribes on the Blue Nile, the *clicks*, which were deemed a peculiarity of South African speech, are detected, and more than this, that an increase or diminution of the prevalence of this linguistic feature could be remarked as the traveller advances towards or from Central Africa.

Another remarkable fact became the subject of discussion, and we await with some interest the fuller details which the report will supply. Professor Lieblein, of Christiania, noticed the Egyptian antiquities, which had been disinterred in Sardinia; and Signor Fabiani exhibited specimens of others found in a tomb at Rome, under the wall of Servius Tullus. The remains were chiefly Egyptian Divinities. It was argued by Fabiani, that the site of Rome must have been occupied at a date anterior to the well-known era of "*Urbs Condita*." Phœnician remains were also found, supporting the hypothesis that there must have been a Phœnician and Egyptian influence in the pre-historic Italian civilisation. Many distinguished scholars took part in this discussion.

M. Lenormant proposed at this section that in future Congresses, Oriental Archæology should have its place as well as Philology. It may suggest itself to this Institute, that a still further expansion should be given to the subject-matter of such Congresses, so as to include the Religions, Primitive Culture, Peculiar Customs, and Folklore, of Oriental peoples.

In the second section, Lenormant read a paper on the Myth of Tammuz (Adonis), as illustrated by Cuneiform inscriptions. M. Oppert gave a long discussion on the Chronology of the Book of

Genesis. M. Renan communicated his views on the subject of certain Phœnician and Aramean Graphit found by Mariette Bey, at Abydos, in Egypt. Many other topics of minor interest were discussed, but they are noticed in the Bulletins with such brevity that it is impossible to form an accurate opinion as to their nature.

In the third or modern Semitic section, no subject was handled worthy of notice, even the briefest; a certain number of Professors brought forward papers on petty points of purely literary interest. A very sensible proposal, however, was made by one member, that the Oriental Congresses had outlived the purely philological period, and should in future comprehend the Judicial Institutions of a Country, as the civilisation and consequent happiness of any people depend a good deal upon them. No doubt this was a move in the right direction; but if nice judicial disquisitions were substituted for petty literary discussions, science would not greatly gain, and the pedantry of Lawyers might, if uncontrolled, be as irksome as the pedantry of Professors.

In the fourth, or Indo-European, section, the subjects were more interesting. M. Oppert read a really important paper on the mode in which the alphabetic Cuneiform characters of the old Persian inscriptions were derived from the ideographic characters of the earlier Cuneiform system by the acrostychie process. Professor Schiefner, of St. Petersburg, made observations on certain properties of the Caucasian languages. He entered into a technical analysis of the morphological structure of these languages, contrasting them with the German and Latin. The publication of this paper by so great an authority on so difficult a subject will be looked forward to with the highest interest. Professor Ascoli, of Milan, by far the greatest of the Italian scholars, joined in the discussion that followed, which opened out some of the hardest questions of Glottology, such as the real origin of internal flexion, which Ascoli attributed, as far as we can gather from the brief account given, to the effect of the assimilation of the vowel to that of a post-positive element, which had subsequently disappeared.

The subject of the language of the Zingari or Gipsies brought on a discussion, in which Professor Balbu Costantinesco, of Bucharest, and Mr. Leland (Hans Brietmann) joined, assisted by Professor Ascoli, who was master of this, as of so many other subjects.

Professor Pizzi, of Parma, then started a remarkable theory, that the Zendic word "karet" appears in all the names of cutting instruments in Asia and Europe. His leading idea was to show how Philology came to the aid of Prehistoric Science in

the discovery and explanations of phenomena of primitive history.

Mr. E. L. Brandreth closed the session with a paper on certain resemblances between the Neo-Aryan Language of Northern India, and the Romance Languages of Europe. The conception, though not entirely original, has never been fully worked out, as it now promises to be. In the same way as the Sanskrit language, when it ceased to be a colloquial medium, was replaced by a group of Sanskritic, or Neo-Aryan vernaculars, viz., the well-known Hindi, Bengali, Urya, Marathi, Sindhi, &c., &c., the Latin language, when it ceased to be a living speech, was replaced by a group of Romance vernaculars, Italian, Spanish, French, Wallachian, &c., &c. But the curious feature is, that in both groups the same linguistic expedients to effect the transition from a synthetic to an analytic language can be traced; and, more than this, certain languages of each group seem to have undergone analogous phonetic influences, viz., the Sindhi and Italian, the Hindi and the French.

Dr. Leitner, who had been specially deputed by the Viceroy of India to attend this Congress, delivered an interesting lecture in the Museum of the Congress on the subject of the selection of the Græco-Buddhist Sculptures and other Antiquities, which he had disinterred in the trans-Indian Districts of the Punjab, and brought with him from India. Upon these remarkable monuments, and upon the dialects of the mountaineers of the neighbouring hills, which he had been the first to describe, he based certain theories regarding the connexion of the Indian and Greek Mythology, at a period previous to the Christian era. The subject was a very large one indeed, and the learned Doctor was the only member of the Congress who had the facility of speaking all the four languages, and he glided from one to the other to adapt himself to his particular hearer. A wish was expressed by the meeting that the Government of India would publish a description of all such monumental remains, and all definite opinions must be suspended till then.

In the Indian section, Professor Rudolph Roth read an interesting paper on the newly-discovered manuscript of the fourth or Atharva Veda, in the Valley of Kashmîr, written in the peculiar variation of the Indian character; the discrepancies between this and other manuscripts was very marked.

Mr. Robert Cust read a paper on the Neo-Aryan Language of India with a view of drawing attention to the important, but rather neglected, subject. The Aryan languages are so celebrated, and spoken by such an overwhelming majority of the people of India, that it is often forgotten that five other families exist, comprising scores of languages, spoken by many millions

over an immense area. These families are the Dravidian, Kolarian, Tibeto-Burman, Tai, and Mon-Anam, some of which are of the agglutimative, and others of the monosyllabic order. An address was voted by this section to the Viceroy of India, soliciting the compilation of a volume of the Proverbs of the Indian people.

In the Altaic section, notwithstanding the presence of some very distinguished men, the subjects discussed were neither numerous nor interesting. Arminius Vambery, of Buda Pesth, read a paper on the Primitive Culture of the Turko-Tartar race. Dr. Donner, of Helsingfors, discussed the question of the connection of the Finnic language with that of the Samoides.

In the Chinese section, Dr. Legge read a paper on the state of Chinese studies, and what was wanted to complete the analysis of the Chinese written characters, which he described as being of incredible antiquity. He remarked that the fetters of this character prevented the language from getting beyond the monosyllabic stage.

Mr. Van der Gabelentz read a paper on the possibility of proving the existence of a genealogical affinity between the languages called Indo-Chinese. The languages referred to in this paper are the languages and dialects spoken in China, Tibet, Assam, and the trans-Gangetic Peninsula. Representing principally, according to common opinion, the isolating system, these languages, in their phonetic appearance, show the signs of advanced corruption, and are separated from each other by rules of position often diametrically opposite. He then inquired whether there is any morphological resemblance between these languages; any phonetic parallelism (*lant-verschiebungsgesetze*). He considers that there is. The first thing that strikes us is the monosyllabic character common to them all, and which distinguishes them from the Ural-Altaic, Japanese, Corean, Aino, and Malayo-Polynesian languages. The type, no doubt, is less pronounced in some than in others. The Tai is more monosyllabic than the Tibetan; the latter more than the Naga dialects. There is also the idiom of the Vayu, of which the conjugation resembles in some respects that of the incorporating languages. Again, in these languages there are several homophones, and these homophones correspond to a remarkable extent between the different languages. This cannot be by chance. He claims for the written Tibetan the most ancient forms of the words. He finds traces of suffixes in ancient Chinese.

I have thus, in the time allotted to me, noticed the most important topics discussed at the late Congress. It would not be just to form any fixed opinion until the actual text of the communications is in our hands, as it soon will be. The range is

very considerable, and it is impossible not to admire the earnestness and devotion of the great scholars of Europe in their several departments of science. It is to be regretted that so many are men of a single subject, shutting their eyes absolutely upon all that lies beyond their particular study. Perhaps this is necessary to secure accuracy, and actual advance in knowledge. The days of omniscient *savants* is passed. The division of scholars into National parties is the safeguard of Truth. When French and German scholars agree in a discovery, it may be accepted as a fact.

DISCUSSION.

Mr. Cust remarked, with regard to the suggestion that the French language should be exclusively used in International Congresses, that the objection was, that it placed the representatives of other nations at a disadvantage, when brought into collision in argument with French, Swiss, or Belgians. It was as much as most men could do, and more than many men could do, to be courteous, and yet incisive in their own language, and no one liked to make such blunders as expose him to ridicule; and yet nothing but constant practice could prevent such happening. The only fair way was to let every one speak his own language, and have a good interpreter, where required.

Mr. J. PARK HARRISON, M.A., read a paper "On some Characters Tattooed on a Motu Woman." The publication of this paper is postponed for the present, Mr. Harrison awaiting further information.

STONES and BONES from EGYPT and MIDIAN.

By Captain R. F. BURTON, H.M. Consul at Trieste.

SIR JOHN LUBBOCK ("Notes on the Discovery of Stone Implements in Egypt:" "Journ. Anthropol. Inst." Vol. IV, December, 1873) tells us that M. Arcelin, in February, 1869, communicated a note to the periodical, *Matériaux pour l'Histoire de l'Homme*, announcing that he and the Vicomte de Murard had found in sundry parts of the Nile Valley rude stone implements resembling those of Western Europe. The only opinion expressed concerning their age was that they are not ancient. In a subsequent Report to the Minister of Public Instruction (June 26, 1869), also published by the *Matériaux*, the same writer concludes that Egypt generally possessed *une industrie*

fort ancienne, probablement préhistorique; and in particular that the station Abú Mangar, a little below Syene, had yielded specimens bearing the well-known characteristics of the neolithic or polished Stone-age. He replied to all objectors in *L'Age de Pierre et la classification préhistorique d'après les Sources Égyptiennes*, 1872; and in the *Correspondant*, 1873, his paper, "La Question Préhistorique," summed up the subject. MM. Hamy and Lenormant communicated also in 1869 to the Société d'Anthropologie of Paris ("Bull." p. 685 of 1869; and p. 15, Vol. V, 1870), the discovery of rude silexes, *hatchettes*, *couteaux*, *grattoirs*, *perçoirs*, *nucleus* (cores), *percuteurs* (hammers), &c., on the hills overlooking the "Tombs of the Kings" (Thebes), and subsequently a hatchet of the St. Acheul type at Dayr el-Bahari. In his conviction that these specimens belonged to the true Stone-age, M. Hamy was supported by MM. Broca and de Mortillet. Dr. Gaillardot, of Cairo, also asserted that worked flints with bones and charcoal have been picked up by M. Prisse d'Avesne in the raised terraces of clay about "Manga" (Abú Mangar?) at Assouan (Syene), and in the crevices of Jebel Silsilah.* This savant sees no reason why man should not have been coëval with the powerful quaternary vegetation bordering on the Great River. M. Pruner Bey, though leaning to the same conclusion, required more evidence (*loc. cit.*, pp. 708-19).

On the other hand, Dr. R. Lepsius, *Ueber die Annahme einer sogenannten prähistorischen Steinalten in Ägypten*, boldly expresses the opinion that these flint flakes are natural fragments splintered by the action of the sun and by excessive alternations of temperature. He asks† why, if they be the produce of industry, hundreds and thousands of perfect and serviceable instruments should have been left neglected on the ground, as if unworthy to be picked up? He also wants to know "why better worked specimens have not been met with?" and here we may object to him the finds of "Helwán." He doubts whether the so-called "scrapers" could ever have been used for scraping. He maintains (*loc. cit.*, p. 113) that the secondary fractures, or chippings, on many of the supposed implements are fresher, of a different colour, and therefore more recent than the main cleavage. Moreover, as Rosellini, the companion of Champollion, mentions that flint flakes had on several occasions been met with in conjunction with mummies; and as he himself had found six flakes in the tomb of Snetembet, a functionary of the fifth Dynasty; and as, lastly, stone knives were used for

* "Bull. de l'Inst. Égyptien." No. 13, p. 58.

† "Zeitschrift f. Ägypt. Sprache und Alterthumskunde." 1870. See also "Berliner Ges. für Anth., Ethn., und Ungeschichte," Mar. 1873.

ceremonial purposes, for instance, in the circumcision borrowed from the Egyptians by the Jews,* even during historical periods, the German savant concludes that, granting these implements to be of human origin, they would afford no evidence of an Egyptian Stone-age. To all these objections Sir John Lubbock (*loc. cit.*) replies categorically :† 1. What are found in such suspicious abundance are *waste flakes*, with here and there an unfinished implement, or part of an implement. Báb el-Mulúk (Thebes), and Abydos, exactly resemble in this respect Pressigny, Grimes Graves, and other Stone-age settlements or camps. And, if it be objected that a similar doubt applies to these, he adds that the same is true, *mutatis mutandis*, of manufactories where gun-flints are actually worked, as at Brandon or Meunes, and where modern savages (Australians and others) preserve the practice. 2. More finished specimens *do* occur; but, as might be expected where the palæolithic age prevails, they are rare. 3. As regards the scrapers, a similar implement is used for the same purpose by the modern Eskimos.‡ With respect to the colour of the fractures, Dr. Lipsius§ contented himself with only ten *Splittern*; and these specimens must have been exceptional. In the hundreds examined by the Englishman, and in the 35 implements exhibited to the Anthropological Institute, “the fractures are similarly coloured and obviously coëval.”

M. Chabas,|| who denies a Stone-age to Europe, expressed a decided opinion, part of a general theory, that many of the Egyptian implements are due to natural solar action; and that those of human workmanship, as the specimens figured by M. Arcelin, are of comparatively modern date. He believes that they belong to the times of the Pharaohs, and that they do not point to the existence of an Egyptian Stone-age. But M. Chabas, a distinguished Archæologist and Egyptologist, has made no special studies of flint implements. Thus he figures a steatite knife inscribed *Sam oer Kherp abon, Ptahmes* (the great Sam, the chief of artists, Ptahmes), and which consequently cannot be earlier than the Saite¶ Dynasty (Psametik, &c., B.C. 664–525). But Sir John Lubbock points out (*loc. cit.*): 1. That this specimen does not show the characteristic Stone-age form; that similar tools were used for incising the side of the

* Egypt also circumcised with the flint knife.

† See also Maury, “Bull. Soc. Anthropol.,” p. 711. Paris, 1865.

‡ “Prehistoric Times,” 3rd ed., p. 97. See also No. 2, Specimens, p. 6. “Notes Anthropol. Inst.”

§ *Loc. cit.*, p. 95.

|| “Etudes sur l’Antiquité historique,” Paris, 1872.

¶ In the original “Scrite.”

corpse before burial, and consequently that the date assigned may be true. 2. That the legend is no proof that where a bronze implement, like the celt in the Museum Kircherianum (Rome), was cast with an inscription, the latter must be contemporary, but that letters can be engraved at any period: for instance, there is a German stone axe with an inscription of the sixteenth century; but no one would consider this a proof that stone axes were used in Germany 300 years ago.

M. Chabas asks with surprise, what could have been the use of the small flakes formed in Egypt and elsewhere, except they were *des essais d'habiles ouvriers cherchant à vaincre des difficultés dans leur art?* This is the style of illustration which the logicians called *obscurum per obscurius*. Sir John Lubbock replies that these *éclats* served for various purposes—for preparing clothes, for arrow-piles, spear-points and javelin heads; also they were let into slits in the sides of flat wooden sword-blades.* And he justly remarks that no one who has specially studied stone implements can have the slightest difficulty in distinguishing between the natural and the artificial.

The highly distinguished M. Auguste Mariette Bey is exceedingly reserved upon the subject, and he is evidently right to speak only of that he has seen during his life-long experience in excavation. He evidently, however, leans to the theory that the flint implements belong to the historic age.†

He remarks (Notice, &c., 6th edit., pp. 81–2): “The question of a Stone-age in Egypt is not yet resolved. Our collection, though certainly showing signs of the human hand, gives us no right to conclude, as so many have done, that these remains belong to the remote period vaguely characterized as prehistoric. Before pronouncing upon this point, we must carefully investigate the peculiar circumstances under which the monument was found. If the flint be taken from virgin ground where time has imprisoned it, the problem may be considered solved. On the other hand, when the silex is superficial, the marks of art have evidently no significance: in the most flourishing epochs of Egyptian civilisation flints may have been used as lance-heads and arrow-piles, or even as knives to incise the dead for mummies (‘Herodotus’).‡

“Now the latter is the condition of all the objects in the glass-

* Nilsson “On the Stone Age,” Pl. VI, figs. 124–126. “Lubbock’s Prehistoric Times,” 3rd ed., p. 412. &c.

† “Bull. de l’Inst. Égyptien.” 1869–71: quoted in the “Matériaux pour l’Histoire de l’Homme,” 1874, p. 16.

‡ The same prejudice in favour of ancient and primitive custom; in fact, a survival, a “superstition” in the literal sense, perhaps induced the Israelites to retain the flint circumcision knife, till a late period of their national life.

case AY;* they were found on or near the surface, and consequently it would be rash to date them. Under the burning suns, and during the dew-drenched nights of Egypt, the *patina* is so easily formed that it is no proof of age; the flints may belong to the Pharaohnic eras, to the time of the Greeks, or even to the Arab epoch. We do not, therefore, exhibit them as prehistoric remains: we simply collect and prepare the elements for discussing a question which is still *sub judice*."

Sir John Lubbock, being "extremely anxious to visit the interesting spots, and by an inspection of the localities themselves, to form, if possible, an independent judgment," visited Egypt in the autumn of 1872. He found worked flints at various spots along the Nile, especially in the Valley of the "Tombs of the Kings" (Thebes) and at Abydos, and generally on the slopes of the hills, and on the lower plateaux above the level of the inundation, wherever flint was abundant and of good quality. He had no opportunity of verifying M. Arcelin's important observation at Abú Mangar: *le gisement se prolonge sous les sédiments modernes; and ne passe pas dans ces sédiments ou je n'ai trouvé aucune trace de pierre taillée*; but he could affirm that the layer of flint implements did not extend over, nor, as far as he could see, into, the alluvial soil.

In replying to the question whether these implements are prehistoric, belonging to a true Stone-age, or whether they are referable to more recent epochs, our author "sees no reason to believe that since the time of Menes, stone has been habitually used in Egypt for cutting purposes." In the ancient ruins, and the immense rubbish heaps, veritable hills which mark the sites of Egyptian cities and towns, he found broken pottery and bits of raw brick strewn about in wonderful profusion, while fragments of stone implements were entirely wanting. He justly considers this "a stronger argument than might at first sight appear, against the general use of stone implements in historical times." Similarly, Dr. Gaillardot (*loc. cit.*) asserts that nowhere in Egypt has been found the medley of worked stones and metals like that which occurs at Hissarlik. Dr. Schliemann ascertained in

* The collection in the Bulák Museum (*Salle de l'Est, Vitrine AY*), mostly palæolithic, is divided into the following five parts:—

1. Pierced agate, etc., rough spear-heads and flakes, from the plateau-summit of the Bibán el-Mulúk, the Valley of the Kings at Thebes.

2. M. de la Noue's finds (chiefly rough flakes and cores) at Jebel-Kalabiyah, near Esneh.

3. The collection of the same geologist from Girget or Girgeh (only cores).

4. The flints of Halwán, presented by Dr. Reil; and

5. Miscellaneous finds from the Necropolis, especially the tombs of the Greek epoch, consisting of four polished stones and six flakes, the central and winged and tang'd arrow-head. My collaborateur, Mr. Hayns, has not yet been able to find out what Cities of the Dead are here alluded to.

the Troad the existence of a transitional period amongst the Pelasgi, since 3,500 years ago, when the people used arms of stone and brick huts, whereas the chiefs possessed gold, silver, copper, and stone buildings. Our author observes that the use of stone knives for opening corpses to be embalmed* may, like the Jewish circumcision knife, be a survival, a "superstition;" and the very fact of the old Egyptians refusing to substitute for it a newer substance (bronze, &c.) appears to him "an indication that they had passed through an Age of Stone, and had even made considerable advances in civilisation before they were acquainted with the use of metal."

Of the 25 specimens described by Sir John Lubbock (Plates XIII—XVII), he remarks that the forms closely resemble those of Western Europe. The figures are all of natural size; consequently more useful for comparison. The finds come from two places, Thebes and Abydos; they consist of one nucleus (core), one awl, and four scrapers, mostly spoon-shaped: No. 8 (Plate XIV, fig. 2) has a single central spine, and shows marks of use on both sides as well as at the end. The rest are flakes, flat and ridged, leaf-shaped and circular; many have the bulb of percussion well-marked, and the edges and extremities either chipped or bearing marks of wear. No. 18 (Plate XVI, fig. 1) is a chocolate-coloured leaf-shaped implement, closely resembling some of the St. Acheul specimens, but of rather fine workmanship; the shape being given by a great number of facets. The two following are also of the same type. Finally we may accept Sir John Lubbock when he says, "After carefully considering the facts and arguments brought forward by MM. Lepsius and Chabas, I am disposed to agree with MM. Arcelin and Hamy in considering that these flint implements really belong to the Stone-age, and are ante-Pharaohic."

But it is a "very pretty quarrel as it stands," and the knotty question is not so easily settled. In this case we have more to debate than the normal three stages: uncritical acceptance, hypercritical rejection, and discriminating belief. The thorough-going Egyptologist who holds, despite Herodotus, that "Art had no infancy in Egypt," has a personal aversion to a prehistoric Stone-age, which he denies *à priori*. He finds, it is true, that the stone-hatchet was adopted by the hieroglyphs and that it now represents (𓂏) "Nuter," a god. But he prefers to postulate a Kushite immigration, one of the wildest theories ever propounded by mortal man, in order to account for the

* The silex knives of the ancient Egyptians are well known. Wilkinson (II, 7) translates Ethiopic Stone (Ob-idian?) by "flint;" and divides the implements into two forms, the broad-flat and the narrow-pointed.

Caucasian type and the Aryan "miscegenation" in the races and languages of Egypt. He begins by inventing a people settled somewhere near India. Having passed through the preliminary stages and reached the "apogee of its civilisation," this people emigrates bodily westward, leaving no trace of itself in the old home, no signs of its exodus, no notice in history. It reaches Egypt, falls to making pyramids and other masterpieces of the highest art which afterwards begin to decay and become Egyptian. Marvellous to relate, this is the belief of sound and ripe scholars; let me quote, for instance. Dr. Heinrich Brugsch-Bey.* These gentlemen ought to begin by telling us what was the indigenous name of the race which they call Kushite. We will then consider the reason why Asia has had its Stone-age, whilst Egypt its limitrophe has been privileged with a civilisation so different and so superior.

The "Solar theory," as I will term it, found many a doughty defender in Egypt. The expedition led by M. Gerhard Rohlfs to explore the Oases, and to traverse the wilderness between El-Siout and Kufra, which, by-the-by, was not reached, found the Libyan Desert, especially in the regions of the lower nummulites, covered with brown and black flint flakes. Their existence, by millions, is attributed to the violent heats of day and the cold of night in an atmosphere whose radiation must be excessive. None, however, had the characteristic forms of the worked silex; nor did the Desert furnish a single habitation of the Stone-age. Yet Dr. Zittel, the geologist of the expedition, found reason to believe that the wilderness was not unvisited by man at an early period. About 20 geographical miles west of the Dakhel Oasis, and in a country perfectly inaccessible to the people of the "Wadys," where the so-called Nubian grits (*grès de Nubie*) form the ground, and where, consequently, silex is rare, he picked up three flakes, long, thin, and three-ridged, "so common in the caverns of Périgord, in those of Germany, and in the pre-historic *ateliers* of Egypt." The extreme isolation of the site, and the rarity of the type, suggested certain doubts: these, however, were removed by the unanimous decision of MM. Fraas, Suess and Desor, and subsequently by the International Congress of Stockholm. Considering the enormous sheets of *travertino* (tuffs), near the Kharghah Oasis, as proving the existence of a flourishing vegetation during the diluvial period, Dr. Zittel is of opinion that the men of the Stone-age might in those days have crossed regions now inaccessible and uninhabited.

Dr. Schweinfurth and Güssfeldt are also inclined to believe that sudden and excessive changes of temperature may have

* See his "Ægypten," *passim*. See the excellent translation "A History of Egypt," by Messrs. Danby Seymour and Philip Smith. London: Murray, 1879.

produced what has been attributed to primitive handicraft. Early in 1876 the travellers visited the Jebel Galálah (Kalat Allah), "a region of mountains and depressions," which extends from the Suez Gulf, about the parallel of Ras Za'faránah, to the Nile, opposite the Beni Suwayf (Suéf) station.* Here are the convents of St. Anthony and St. Paul on the great African Wady Arabah (of the waggons), which bears those venerable buildings. The nummulitic plateaux, and especially the Wady Senúr, are strewn with immense quantities of silex, like those that metal whole tracts in the Lybian and Arabian deserts. The cores had been split to prisms by the abnormal variations of temperature; and, though none were worked, the cleavage was clean, as in our Museum specimens of Stone-age weapons.

In 1874 Dr. Gaillardot ("Bull." *loc. cit.*) who, however, accepts the Egyptologist view, ably resumes the precise actual state of the question as follows:—

1. *Ateliers* and prehistoric foci of silex manufacture have lately been found between Cairo and Assouan (Syene).† A bed, often several centimètres thick, and composed to a certain extent of flint flakes of all forms and sizes, has yielded worked implements, saws, knives, arrow-piles, lance-heads, wedges, hatchets, scrapers, and similar articles.

2. These *ateliers* represent, satisfactorily enough, the divers conditions which in Western Europe characterise those of the stone-cutting age. They occupy the plateaux crowning the hills that form the old geological river-bank, and they often cover considerable space. Till the present time they have been found only in the environs of great cities. No conclusion, however, must be drawn from this fact: they have not yet been sought elsewhere; no exploration of the Nile banks has been pushed by excavation beyond the great centres of ancient population; and we have still to investigate, not only the ancient alluvia, but the mountain chains that part the Nile Valley from the Red Sea and the Lybian Desert. The latter during the quaternary period were, in conditions of climate and vegetation, very different from the present.

3. The implements, as well as the *ateliers* of Egypt, are

* Lithographed sheets describing the trip were issued in Cairo, May 20th, 1876. Notices were also sent to "The Academy" (May 27th, p. 511; and June 3rd, p. 534). In July 7th, 1877, Dr. Paul Gussfeldt began a formal description of his excursion in the late Petermann's *Mittheilungen*. Dr. Gg. Schweinfurth also printed (without place or date) an interesting illustrated pamphlet *Die ältesten Kloster der Christenheit* (St. Antonius und St. Paulus). In "The Gold Mines of Midian" (Chapter iii) I have proposed this block of hills as a Sanitarium.

† The Hamámát collection in the Citadel of Cairo contains a fine axe, slightly injured, which was picked up in the Long Valley. See "The Land of Midian Revisited," for a notice of this mineralogical collection.

absolutely those of the European paleolithic age. There is complete identity in the number and variety of types; in the form, the workmanship and even in the minutest of details, such as the re-working (*la retouche*). We cannot believe all this to be the effect of mere chance.

4. To judge from the great mass of *débris* constituting the few *ateliers* of fabrication which have as yet been explored, and which will be discovered in far greater numbers, the amount of implements produced has been enormous. At the same time, outside of these centres a relatively insignificant number has occurred in the ruins, the tombs, and the earthworks disposed along the stream. It would, doubtless, have been far otherwise had the use of the worked stones been continued by the poorer classes, that is the mass of the population, during the thousands of years which have elapsed between the earliest historic ages of the Nile Valley, and an epoch not far removed from our own. Had such been the case, we should have found, as at Hisárlík, the mixture of the two epochs the Stone implement and the Metal instrument; moreover, the first would have lost their predominance, and become rarer as modern ages were approached.

5. Accepting the important and generally recognised fact that "there is no infancy of Art in Egypt"; that the most ancient monuments and manufactures are those which bear the impress of the highest civilisation; whereas, on the contrary, those which follow show signs of marked decadence; we must hold that the old Egyptians settled in the Nile Valley in remote times, but long after they had emerged from the pre-historic period; in fact, when they had risen to the zenith of their ethnic cultivation. Hence we believe that the flint implements were not brought by them.

6. The conclusions warranted by the facts here stated are as follows:—It is at present impossible to prove that a Stone-age existed in Egypt. But many considerations lead us to believe that the Valley of the Nile was occupied before the old Egyptian emigration by a savage tribe or tribes, living under conditions analogous with those whose history has been revealed to us by the caves of Western Europe.

It is hard to agree with the learned doctor upon the non-existence of a Stone-age in Egypt, when he subtilises the question by attributing the work to older Egyptians than the old Egyptians. And that a true Stone-age is known not only in the Nile Valley but in the adjacent provinces occupied by the old Egyptians is suggested by modern discovery in the "Desert of the Exodus,"* and in the Nejed (Negeb) or "South Country" of

* London: Bell and Daldy, 1871.

Abraham and the Hebrews. Messrs. E. H. Palmer and C. F. Tyrwhitt Drake have practically settled the question by large finds of stone implements in the "Wady Igné, properly Gena, or as it is sometimes called, Wady Maghârah," well known for its mines and tablets. "Flints are found in large numbers near the monuments of Sarâbit el-Khâdim, but do not exist at the other Egyptian mines of Sinai, where no hieroglyphic tablets have been placed" (p. 197). Mr. Bauerman, in a communication to the Manchester Literary and Philosophical Society, had already propounded a theory that the flints were probably employed in the sculpture of the hieroglyphic tables. Prof. Palmer believes that the large caverns or galleries, cut out with vast labour in the steep walls of sandstone, were made with "chisels of bronze, or other hard metal, and not the flint flakes, which are found in such quantities in the vicinity. The Egyptians, we know, were expert metallurgists, and flint implements could hardly have made such marks as those visible on the stone." Both the travellers opine (p. 191) that the *graffiti*, so well known as "the Sinaitic Inscriptions," Aramæan, Arab, Greek, and European, were dotted in with sharp stones, but they do not allude to any discovery of flints near or about this section of the Wady Mukattab. In other places (p. 203) the inscriptions are for the most part chiselled. At Wady Wa'arâ (p. 254), in the outlying districts of Sinai, they opened a "Nâmûs" of the stone-circle class, a ring of upright slabs about three feet high. A smaller ellipse in the centre, contained the cist and the coffin; the skeleton was found lying in a doubled-up position and "accompanied by a few shells and worked flints." Such Nawâmîs (sing. *Nâmûs*), or "Mosquito houses," are so called by the Sinaitic Arabs, the tradition being that they were built by the Children of Israel as a shelter from the Mosquito-plague sent from Heaven to punish their rebellion. These remains, evidently prehistoric, are of two classes (ably described in pp. 139-141, and figured in p. 317): the circular or beehive hut for the living, and the stone circle for the dead. The travellers apparently hold the ruins to be the permanent camp of an ancient pastoral people. I would suggest that of old they belonged to the Hutaym or Hitaym, the "broken tribe," one of whose divisions is still called the *Nawâmîsah*. This would support the hypothesis of my friends that Sinai was formerly peopled by other than a pure Arab race, and that the present Bedawin came over with the (Mohammedan) Conquest.

In the Tih Desert, north of Sinai, they found the hard unyielding soil "covered in many places with a carpet of small flints, which are so worn and polished by the fine detritus of sand, a constant sand-blast, as to resemble pieces of black glass"

(p. 287). In places, the soil of white gravel, covered with the coarse black sillex, technically called by the Arabs a "Himádah," gives a melancholy prospect. Farther south occurred rounded bits of flint, which fell to fragments in the hand: this shows the working of some force not violent enough to scatter the pieces. Sudden expansion or contraction, in temperature varying between hoar-frost at night and 120° (F.) in the sun by day, explain the process, and subsequent burying in the agglutinizing sand would produce a peculiar form of breccia.

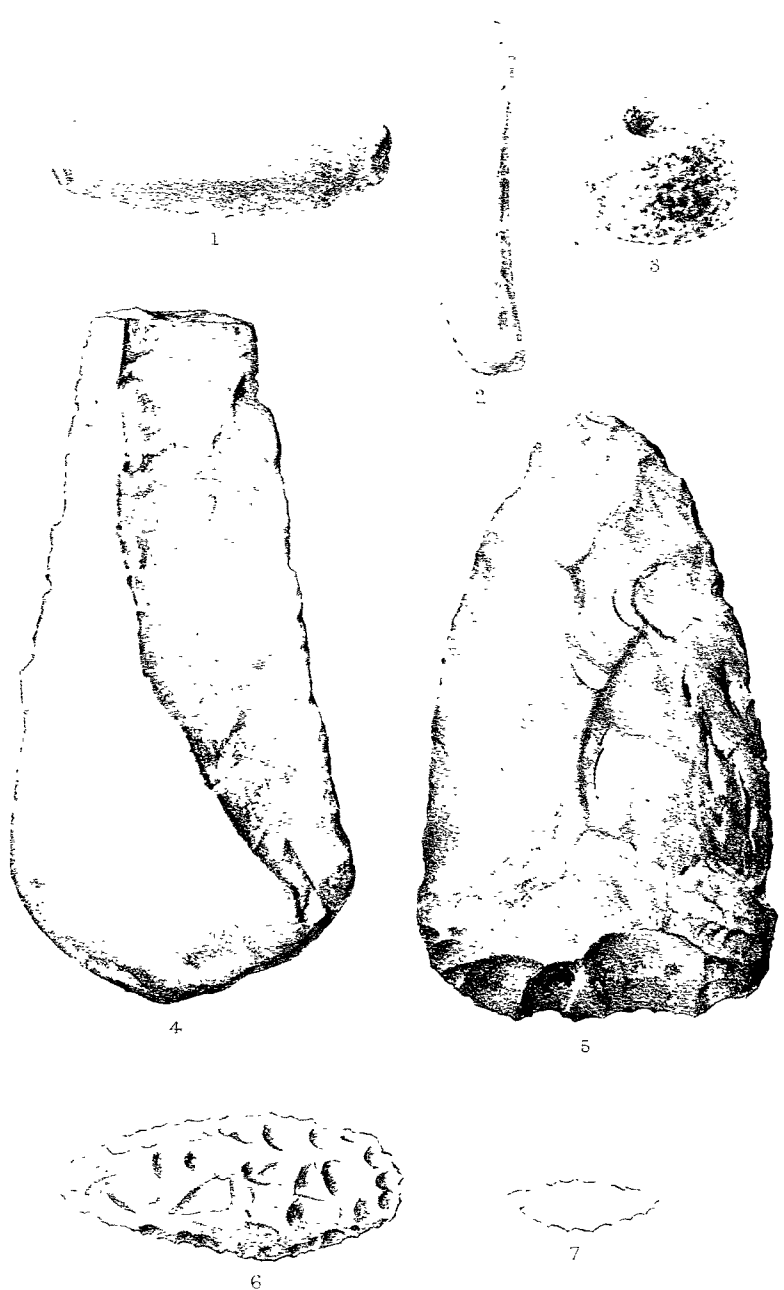
At the southern edge of this rude wilderness, near the "Erweis el-Ebeirig," whose curious remains they would identify with the Israelitish Camp, Kibroth-Hattaawah (ha ta'avah) or "the Graves of Lust" (Num. xi, 33-35), they collected a number of flint arrow-heads, lying about some well-built Nawámis, and they concluded the spot to be "one of the ancient hill-pits so common in the country" (p. 312). Here, again, in one of those "quaint beehive huts," evidently a dwelling-house, they picked up "a flint arrow-head and some small shells" (p. 318). In the Nejeb, the "Teleilat-el-'Anab," alias "Rujúm-el-Kurúm" (grape mounds, p. 352), are formed by sweeping together, in regular swathes which extend for miles, the flints that strew the ground: similarly, in the Hauran, grapes are, or rather were, trained along these heat-radiating mounds.

Still later, the Rev. F. W. Holland, in 1878, passing over the Tih Plateau, found "large numbers of flint flakes and arrow-heads, proving that this road was in ancient times much used." And he has little doubt that it was the route "followed by Abraham from the South Country to Egypt." (See paper, "A Journey on Foot through Arabia Petraea," read at the Geog. Section of the Brit. Assoc., August 15th, 1878.)

The Stone-age extended farther to the East and South; in fact, deep into Mádí (plur. Madi-an or Madi-na), which the Hebrews converted into "Midian." We know from the hieroglyphics* that the old Egyptians worked the northern parts for copper; and my two explorations have brought notices of some 32 ruins of cities and towns and villages. The destruction, like that of the Christian Churches in the Nejeb or South Country,† may date possibly from the invasion of the Saracenic Chosroes (A.D. 531-579), or the passage of the Caliph Omar (A.D. 651).

* "The Land of Midian Revisited," Chapter iv.

† This "Negeb," or "South Country," is not to be found under either names in Smith's "Dictionary of the Bible." The former term is borrowed from Genesis xx, 1, where Abraham is represented as going to "Erez ha Negeb" (or Nejeb). The LXX translates εἰς γῆν πρὸς Αἴθα: the Arab "ilá Beled el-Kiblati;" the Vulgate "in terram Australem" (so the translation of the Samaritan version); and the interpretation of the Greek version "in terram ad Africum."



EGYPT AND MIDIAN

- | | |
|--------------------------|-------------------------|
| Flint 1 & 2 Muharakah | 3 Core speckled granite |
| or rub Stone | 5 Greenstone Axe |
| 4 Quartz figured by fire | 6, 7 Scraper (Mr Hayns) |

And now a few words concerning the small collection of silex and stone implements which I brought back from Egypt and Midian.

Dr. Heinrich Brugsch-Bey was kind enough to give me a small box of "*Objets préhistoriques, provenance Thebes.*" It contains five flint flakes, one apparently an awl, and another a fine arrow-head. There are four cowries, with backs broken and hollowed. Apparently this shell is often found throughout this region in conjunction with prehistoric instruments.* Of three bits of worn quartz, two are pierced, apparently for stringing, and the same is the case with an old corroded helix.

M. A. Lombard, proprietor of the Hôtel d'Helwan, obliged me with a pasteboard, to which are attached 51 flints, collected in the neighbourhood of the Thermæ. Of these, many have jagged and saw-like edges. The antiquary must be careful how in these days he makes purchases near Cairo, where the Arabs have learned "flint knapping" to perfection. From the Jebel el-Ahmar, also near Halwân, I have two tin cylinders full of flint flakes, apparently natural, collected for me by Mr. W. P. Hayns. Of these more presently.

The "finds" from the Pyramids consist of sundry hammers and a rude article for pounding grain. This Mahrâkah or rub-stone is a prism with a flat base, somewhat worn, measuring in length, 10 cent. 5 mille.; in breadth, 5 cent. 6; and in height, 2 cent. 5. It is a rude lumpy article of hard drab-coloured grit.

The little collection from Midian is composed of:

A section of a shallow vase in fine alabaster, a bit of very careful work. In the tracing the inner rim is shown: the outside forms a regular curve.

A cylinder of spotted white and black granite (quartz, felspar, augite, hornblende, and a little mica), a very hard stone, taking a fine polish. This somewhat enigmatical find stands 1 cent. 45 high; the total diameter is 2 cent. 1; and across the upper part it is 1 cent. 45. The bore, bulging out at both extremities, shows a minimum breadth of 0 m. '005. It was found in the ruins of Umm 'Amil. Apparently it is similar to the pierced cones (not whorls), which M. Schliemann calls *carrouselen* (tops) or *vulkan* (volcano).

There are two hatchets:—

No. 1 is apparently of quartzose stone, much damaged by the action of fire, which has coloured with red and blackish-red the edges and the side not shown in the tracing. The

* The Bulak Museum contains specimens of what appear to be bronze imitations of cowries.

profile, if not broken on both faces, would represent a flattened prism.

No. 2 may either be an axe or a spear-head. The material is a fine hard greenstone, with white lines (quartz?). It is also prismatic, and the chipping, especially of the edges and the convex side, is carefully and artistically done.

There are three flint flakes:—

No. 1 is a simple *éclat* showing the conchoidal fracture in the concave side, while the convex bears two ridges converging to a point. This is a very rude article, and I have hesitated to assume that it is the produce of art.

No. 2 a fine-worked piece of chocolate-red porphyry: smooth on the side not shown in the tracing. A single spine runs along the dorsum, with signs of a second to the right.

No. 3 is a fragment of fine leek-green jasper, with longitudinal white bands. The fracture is conchoidal, and the convex side shows a single ridge. The edges are chipped, and the base is evidently broken.

No. 4 is a bit of transparent rock-crystal (hyaline quartz), which might easily be mistaken for glass. It is shown to be artificial by the trimming of the neck, and the comparison with a flake that preserves the natural fracture, sets the subject at rest.

Of the worked stones two are balls:—

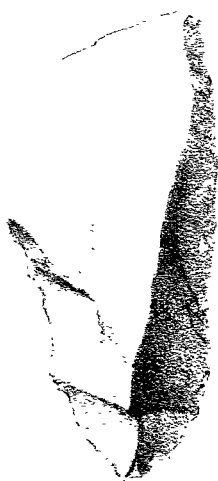
No. 1 is of fine white crystalline and saccharine marble, found at Maghâir Shu'ayb: the Bedawin declare that it is the produce of the Jebel El-Lauz. From the latter I also brought away a slab of excellent marble, with part of a monumental inscription; it has been deposited in the British Museum. The diameter of this ball is 2 cent. 4 mille.; there is a scar on one side, and the part buried in the ground shows a brown tinge.

No. 2 is broken in half, a hard and homogeneous Serpentine, with smooth flattenings which may be due to use. It is thus a "spheroid oblate" at either pole.

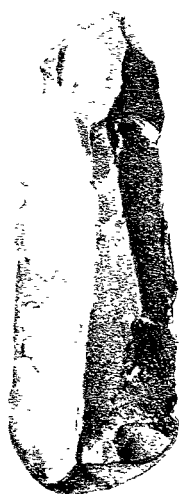
Of the worked stones, one is a truncated cone of Chalcedony-agate, inscribed with part of the Confession of Unity in rather peculiar Kufic. This has been described in "The Land of Midian Revisited," Chapter xii.

The Carnelian has also been described in "The Gold Mines of Midian," Chapter x. The cuts, which are hollow and groove-like, suggest the idea of a talisman, or a tree-Ogham.

There is also a crucible which may be of any age ("The Land of Midian Revisited," Chapter iii), and a fragment of what appears to have been a mortar; a useless looking affair of the lightest and most porous lava, and with a diameter of 1 cent. 7 mille. The pierced clay dish of the spindle-whorl type may



1



2



3



4



5



6



7

EGYPT AND MIDIAN

*Figs 1 2 3 4 & 5 Flakes of Ebur Porphyry
6 Green Jasper and Rock Crystal
7 Lamp*

also be either very old or very new. The same may be said of a small flat "button" of steatite,* a material much used, as in Brazilian Minas Geraes, by the moderns as well as the ancients of Midian. Of these soapstone articles a quantity was collected.

There are two enigmas:—

No. 1 is a pebble of quartz apparently worked into the shape of a cowrie with a hollow base shown in the tracing. No. 2 is somewhat similar, but the back has been planed down, and a dwarf druse shows a nest of little white crystals.

The handmills or querns you will find, I think, very remarkable. They are scattered amongst the ruins in thousands, it may be said, without exaggeration; and considerable violence must have been used to break them. The upper stones, with the double hole for the handle and for feeding the mill, are rare: they were probably carried off. The usual materials are the soft red sandstones of the Hismá, or inner region; porous lava, and hard stones, as granite. The finest specimens, probably used for quartz-crushing, were found in the South Country about the mines Umm el-Karáyát and Umm el-Haráb. They were of three kinds: the rough and coarse basaltic lavas served probably for the first and rudest work; red granite and Syenite granite for the next stage; and, lastly, an admirable handmill of the compactest of grey granite, smooth as glass and hard as iron. Around the pin-hole are raised and depressed concentric circles intended for ornament, and the "dishing" towards the rim is regular, as if turned by machinery. We saw nothing superior to the bit of work now submitted to you. All are nether mill-stones, so carefully smashed that one can hardly help suspecting the kind of superstitious feeling which suggested iconoclasm.

With respect to the remains of pottery, I would remark that, like the vessels found at Troy, some have been hand-moulded, others turned upon the wheel. The ground colour, ashy-grey, yellowish, red, dark-brown and black, varies according to the proportion of silica and iron oxide in the clay and the greater or less amount of the oxidation produced by burning. According to Dr. Schliemann ("Troy," p. 49), the beautiful black gloss of the Hellenic terra cotta, "consists of lamp-black or pure carbon." The clay vessels having been placed in slow furnaces in which

* *Lapis Ollaris*, the *pot-stone* or Siphnian Stone of which Pliny thus speaks: "On the Island of Siphnos there is a stone which is hollowed out and turned for vases; these latter are very useful for cooking victuals or for the preservation of eatables, which, as we know, is the case with the *Comus Stone* in Italy. The Siphnian Stone has the peculiarity that, being heated, it becomes black by the contact of oil and much harder, it being naturally soft. It can be turned and used for ornaments." Dr. Schliemann found cones of this steatite, and plain cones and carved lentoids at Mykenæ; and in parts of the Brazilian interior it forms the usual kitchen-pottery.

resinous wood was burnt, and where there was consequently dense smoke, the latter descended upon the earthenware in the form of the finest powder, and was likewise burnt into the clay. It is also possible, but by no means probable, that they used a black pitch or asphalt, which was dissolved in oil of turpentine; perhaps they used liquid pitch, and painted the vessels with it. The burning of these would likewise produce coal-black, which in later times was called the *Atramentum indelibile* of Apelles." A lustrous black pottery was also produced by glazing with lead the clay after the latter had been well burnt. The brilliant red, in the so-called Samian ware, is only oxide of iron, a component part of the clay of which the cups are made.

It is regrettable that whilst the Italian antiquaries have carefully analysed their pottery (*see* the various studies of the Etruscan cemeteries by the learned Bolognese, Count Gozzadini), our English Archæologists "see no good" in the work. This, and other signs of neglect, give our writings that painful sense of amateurship, of dilettanteism, self-sufficient, and self-assertion withal, which contrast so unpleasantly with the works of the Southrons, in whom the archæological sense is apparently instinctive and innate.

Fragments of glass were picked up in large quantities from the ruins of Midian; and the little collection shows two distinct periods. The modern is the blueish and bottle-green material which Hebron still manufactures. The ancient, procured by digging, is so much degraded and decomposed, the effect of damp, that scaling off and iridescence have supplanted the original texture and colour. Amongst the Greeks of the classical age there were many varieties. The dark-green or black-brown was made from the obsidians of Thera, Milos, &c., treated with soda, potash, and oxide of lead, to make the *silex* flow readily. The opaque-yellow was alumina mixed with iron oxide; and oxide of copper, or, possibly, malachite was added to form the blue variety. Cobalt also served for this purpose. Soda-glass or natron glass has the property of splitting into a multitude of small leaves or fragments. To produce lead-glaze, a protoxide of lead was used by way of alloy.

PART II.

Flint Hunting around Cairo.

WHILST literati were debating the pros and cons of a Stone-age in Egypt, practical men were finding worked stones in all directions, even around Cairo itself.

Dr. Gaillardot ("Bull." *loc. cit.*, p. 57) remarked that between Cairo and Suez certain tracts of desert surface are covered, as far as the eye can reach, with flint flakes, the produce, it is supposed, of atmospheric variation; and the dull grey colour of these patches attracted the attention of many travellers in former times when the overland vans ran on this line. Mr. H. P. Le Messurier, now of Cairo, found and collected a number of worked silexes about El-'Awaybit, the central station, which stands some 800 feet above sea level. My present paper will notice various discoveries in other places about Cairo, especially near Halwán to the south-east; around the Pyramids west of the Nile; and about the Jebel el-Ahmar, south of the capital.

Halwán (*les bains*) is well known to travellers in Egypt, and the excellent paper of Mr. A. J. Jukes Browne,* accompanied by a ground plan, renders long description unnecessary. Nor need I notice the silex implements now exhibited, after the careful and accurate description of my predecessor. The little Egyptian village, which gives Halwán a name, lies on the right bank of Father Nile, embosomed in a forest of date trees: The modern establishment, distant from it four kilometres, and $15\frac{1}{2}$ miles from Cairo by rail, rises 33 metres above the mean level of the river: about as high, people say, as the tallest minaret in the Citadel. A canal, derived from the stream higher up, would make the whole of this section of Nile alluvium immensely productive; under the sand and *débris* appears everywhere the dark dry mud of the old river-bed. A few outlying bungalows lead to the *Établissement*, a large hollow building with a central court-yard which, when closed for the night, suggests the idea of a pretty "Queen's Bench." Its peculiarly offensive sulphur-baths recommend it to the rheumatic, the gouty, and the paralytic; the water cannot be bottled on account of its tendency to decompose; and the cold saline springs, which when filtered keep well, are compared with the bitter waters of Pullna and the Muhlbrunn of Karlsbad.

Halwán has a little history of its own, for which Dr. Reil† may be consulted. I may add to his notice that Colonel Howard Vyse ("Appendix to Operations," &c., Vol. III, p. 4),

* "On some Flint Implements from Egypt," "Journ. Anthropol. Inst.," May, 1878. My paper was finished long before I had an opportunity of reading Mr. Browne's.

† "Les Eaux thermales salino-sulphureuses d'Helouan près du Caire, Egypte et Helouan comme Sanitarium," par le Dr. W. Reil, Directeur des Bains d'Helouan. "Le Caire Typ. Française Delbos-Demouret, 1874." Dr. Reil tells much about Halwán, but with typical Teutonic want of the practical, he does not say how far it is from Cairo, as if "quatre heures (Stunden?) de distance du Caire," were enough. Mr. A. J. Jukes Browne makes the Jebel Torah near El-Ma'sarah (not Mahsara) in height "possibly 8,800 feet." This appears to me a monstrous exaggeration: possibly a typographical error.

who knew this part of Egypt well, identifies it with the *Scenas Mandras* of the "Itinerary" in the "Nomos Aphroditopolitis." The "Itinerary" places it twelve (Roman) miles* from Babylon; and the "Notitia" makes it a military post. Under the Emperor Leo I it was a Bishop's see, and the Coptic name "Alban," seems to have originated the modern "Helwán." The historian El Makrizi, cites Halwán, son of Babylon, son of Amru; son of the Amir el-Kays, king of Egypt, son of Sabá, son of Zášúb, son of Jahúb, son of Kahtán (Joktan?). The town was either rebuilt or restored by 'Abd el-'Aziz ibn Merwán, who, flying from a pest which lay waste Fustát, or Old Cairo, in A.H. 70 (= A.D. 690) here established his residence, and adorned it with gardens, conducting to it the mineral waters collected in the desert.

The ledge or river-bank containing the sources, measures about $4\frac{1}{2}$ kilometres from north to south, by a little over 3 in breadth. It is divided into two almost equal parts by the Wady el-Nakhil ("Valley of the Date-Groves"), whilst the northern and the southern limits are the Wady Karáfish, and the larger Wadi el-Rashid. All three drain (to the Nile) the rare rains which water the barren hills of Torah, the Arabian chain, a continuation of the Mukattam range near Cairo, rising from 200 to 300 metres above the plain. They form the right or eastern bank of the river-valley as it lay in geologic ages. The formation is the tertiary calcaire. The lowest strata are cretaceous, affording here and at the Ma'sarah station good Balát ("slabs") for flooring rooms; above stretch the Nummulites, and the surface is hard and vitreous limestone very rich in silicic acid. The softer parts which underlie these couches make good ashlar and lime; and they are separated by horizontal stratifications of argile, of marl, and of crystallised gypsum. Here and there crystals of sulphur are found; and, upon the plain, yellow powder is thrown up by the ants. It has been proposed to exploit the imperfectly crystallised gypsum, the plaster of Paris found upon the surface of the mountains and the plateaux. Crystals of carbonate of lime, of barytes, and of strontium also occur; and scattered over the surface appear rolled and polished fragments of petrified wood, the same formation as the two "Forests," one near Cairo, and the other lying to the west of the Nile, about 1 hour 30 minutes from the Pyramids of Ghizeh (Jizah).

In a lateral valley of the Southern Wady El-Rashid is a remnant of the Pharaohnic age, supposed to be a princely tomb. A pyramidal hillock is hollowed by a shaft, 21 metres deep;

* Roman $1\frac{1}{4}$ = 1' (geographical mile or knot) = 10 stadia.

and from the bottom a gallery rises, with an oblique angle northwards. One part of the hillock also shows many *débris* of dark granite, probably the remains of a sarcophagus, broken by means of fire and water. About 15 minutes' walk east of the *Établissement* is a place called "Bellahim" (Reil), an old quarry still worked; and here the people pretend that a "Frank" carried off a large hoard.

I first visited Halwán (March 14, 1877) in company with Mr. W. E. Hayns, of the Numismatic Society, to whom the site has long been familiar. The shelving plain, which commands a fine view of the stepped Pyramid of Sakkará, and of Dáshúr with its double angle of pitch, has two chief centres of worked silex, suggesting a prehistoric manufacture. One lies around the last well, north of the Helwán Hotel, on the line of the Wady Karáfish; here Messieurs Hayns and Browne, F.G.S., guided by Dr. Reil, picked up a flint-saw and many flakes. The other is about two miles south of the *Établissement*, upon the slope of a basin drained by the large and open Wady el-Nakhil, noted by its pair of palm-clumps. The watercourse has at times rolled a furious flood to the Nile, as we see by the stiffly standing cliffs of a stone harder than the surrounding grits; the latter, connected by silicic acid and oxide of iron, is still in process of formation. Here fragments are again abundant; and the shapes at once distinguish them from the dark blue limestones scattered around. They are found upon the surface, and I am assured three feet, and even more, below. This is a crucial point. A single worked flint, found a yard underground, in soil which has not been stirred, and which shows no signs of recent deposit, will do more than the writings of a hundred men to establish the existence of a veritable Stone-age in the Valley of the Nile. Mr. Hayns bears this point in mind, and devotes his attention to it. As yet, however, the results are insufficient.*

Mr. Lombard, the present proprietor of the Halwán Hotel, gave me some fine specimens of saws and tools and flints; but—travellers, beware!—they are now "knapped" and sold for "Antikás" by the Egyptians whom perverse strangers *will* call "Arabs." Similarly, Dr. Schliemann's workmen readily learned

* Lately Mr. Hayns found at the Bir El-Hadíd, the last well north of Halwán and north-west of the *Etablissement*, a scraper near a piece of bone. The depth was only three inches; and as the ground is a soft and sandy rock the flint might have been washed down from the surface by rain. The boy who accompanied Dr. Moore assured Mr. Hayns that the bones (of animals?) are found below, and the flints on the surface. Mr. Lombard declared that he found bones and flints attached together. Mr. Browne, considering the association of these Halwán flints with horses' teeth, appears inclined to "assign them to a period which is hardly prehistoric, so far as Egypt is concerned."

to forge marks in terra-cottas ("Troy," p. 194). The Arabian chain about Torah, ancient Troja, and the Petrified Forest, south of Cairo, have still to be examined.

On April 29, 1878, I proceeded, also under the guidance of Mr. Hayns, to inspect the sites of various finds to the west of the Nile. Over night we had sent on three donkeys to carry ourselves and provender. A cool and beautiful morning, the local May-day (called *Shamm el-Nasim*, or the Smelling of the Zephyr) saw us *en route* to the great Pyramid, reached in the usual hour and a quarter. The road is of course unfinished, and the last few hundred yards of the eight mile drive became very trying to animals. At 7.45 A.M. we mounted ass—an operation never pleasant to me; one feels as if it would only be humanity to carry the patient, willing little beast oneself. The landmark of this, our northern ride, was a bluff white scarp with a flight-of-steps formation, buttressing the left bank of the Nile, and crowned by a cap whiter still.

Donkey-driving, an abomination to the ancient Egyptians, is one of the industries which flourishes most in the Great Valley; and its abuse calls loudly for the establishment of a Humane Society—a *Société de Bienfaisance*—with branches in every large town. The cruel goad, a nail set in a stick, has disappeared from Alexandria; but there is still much to do. Let me strongly recommend my countrymen never to mount an animal without seeing that it is in good condition; and, when a wounded or worn out ass is brought, to pay only half-price. The cries of the donkey-boys appear strangely European; yet they may be as old as the hills. Some are confined to the Felláh; others are used by the "Sons of the City;" such as "ó á;" "há-á;" "Tchí," more labial than our palatal "tchk," and "Jí" sounding exactly as in "Gee-up."

Our route lay along and below the modern left or west bank of the Nile, the continuation of the hillocks that bear the Pyramids. They are the normal dark mounds naturally metallised with hepatic silex, and streaked with sheep-trails and camel-tracks. The vegetation was familiar to me after Midian, the borage-like Kahlá (*Echium*) our "purple bugloss;" the yellow thistle; the brown Kaff Maryam (*Anastatica*) "palm of (the Virgin) Mary," much used by the superstitious; and the coarse Halfá-grass (*Cynosurus durus*), well browsed down. In 1876 the inundation covered this part of the valley; but the flood was unusually high; and, as a rule, Typhon, the Desert, in the shape of sand-drift from the west, gains upon the palm orchards and the rich fields of black soil which shelter and surround the villages of Kerdásah and Abú Rawásh.

After one hour we attacked the long slope projecting from

west eastward, and abutting below upon a large cemetery, with a scatter of trees about the one white-washed cupola, and the two time-darkened domes. Here are the ruins thus alluded to by Howard Vyse (*Ibid.* III, 9). "Upon a plain now covered with sand, between this place and the village of Kerdassy (Kerdásah), the site of a considerable town may be traced. The name of it has perished together with its edifices; but from the apparent antiquity of the Pyramid in question (Abú Rawásh), it was probably Cochoma, mentioned by Africanus as having existed under the fourth king of Manetho's first dynasty, Venephes (Enephes or Venephres), son of Cencenes, for that monarch is said to have erected a pyramid near the town of Cochone (Cochoma or Choe)."*

The body of the well-marked watercourse is sprinkled over with blocks, often of large size. They are mostly the snow-white, chalky, marly limestone of the hills; in fact, the common rock of the Nile-Valley, and the fawn-coloured *Calcaires* so frequent in the desert. There are also scatters of petrified wood, fragments from the western Jebel El-Khashab ("Petrified Forest"). The head is a gathering of many little gorges and watercourses, and the whole is known as Wady Abú Rawásh. The name is that of the Shaykh, whose whitewashed tomb, set off by the leafy *Jammayz* (Sycamore), and the feathery date-tree, gives an odour of sanctity to the northernmost of the two villages. Here we find other objects of interest. Howard Vyse (*loc. cit.*) says: "Upon a projecting knoll, on the eastern side of the mountain, and near the village of Abú Roash (Rawásh), are also the remains of a building of considerable magnitude and solidity. It is composed of crude bricks, made of Nile earth, without any intermixture of straw. Small sepulchral grottoes, at the bottoms of inclined passages, have been roughly hewn in the side of the mountain; they contain sarcophagi, which are without any ornament or inscription.

After a charming ride of 1 hour and 30 minutes (= 5 miles), reduced on return to 1 hour and 15 minutes, we dismounted near a quarry still worked. Here a cave, probably an old tomb, once double and now single, shows the growth of modern tradition. In 1875 Mr. Hayns and two other English travellers were treated to a shower of stones by a mad Darwaysh, a gigantic naked negro. One of the Franks entered his lair and was received with a blow of the Nabút (quarterstaff); whereupon they smoked out, *à la Pélissier*, the ruffian, who ran howling over the hills and far away. But this *finale* is far too tame

* "Cho" would mean a hill. We are now in the Nomos Latopolitis.

and prosaic for the imaginative mind of "Kem."* The Bedawi boy, Ibrahim Sammalúsi, hired for a franc at the Great Pyramid to carry a "gugglet" of water, called the hill Maghárat El-'Abd (Cave of the Slave, *i.e.* negro); and declared that when the "Faranj," armed with guns and pistols, stormed the place, its tenant, the Darwaysh, had (preternaturally) disappeared and was never seen again.

We rounded the stiff white scarp by ascending the block of dark limestone to the left; and presently stood some 600 feet above the Nile, at the base of the northernmost item of the Memphis Cemetery, known as Abú Rawásh. It is a fine study of a pyramid in decay, with only the lower courses still standing. Those who would realise and feel the vastness of these buildings, even the smaller or second-class, and who would understand the disposition of the royal chambers, are advised not to think of "Lincoln's-Inn-Fields," but to spend an hour wandering over the truncated summit of the Abú Rawásh ruins. I shall extract the description of Howard Vyse (p. 8), with a few notes of my own to illustrate its present state.

"This pyramid is situated about five miles to the north-westward of those at Gizeh.† The base (320 feet square) alone remains. The defective places have been made good with masonry, but the bulk of it is formed of the mountain (composed of hard chalk), which has been reduced to a level around it. No part of the external casing is to be found;‡ indeed, the edifice was not probably ever completed, or even raised to a considerable height, for scarcely any materials, and very little rubbish, are to be seen, although the situation is difficult of access.

"An inclined entrance-passage, and an apartment lying east and west, have been constructed in an excavation, and have been lined with fine calcareous stone from the Tourah (Torah) quarries.§

"The passage (about 150 feet in length)|| is in the centre of the northern front, and descends at an angle of 22° 35'. The dimensions of the apartment are about 40 feet by 15; and above it smaller chambers appear to have been constructed, similar to those over the king's chamber in the great Pyramid of Gizeh. Hieroglyphics have been inscribed with red ochre on some of

* Kem or Khem (black-land whence "Ham" son of Noah) in hieroglyphic; Kemi or Khemi in demotic.

† N. West (*mag.*) of "Cheops."

‡ That is, found *in situ*.

§ The nummulete of which Cheops and Cephren were made.

|| The length of the passage facing north is apparently understated. The Central Chamber is shaped like an inverted T (⊥), the perpendicular being the ramp of approach and the horizontal the receptacle-chamber of the Sarcophagus.

the blocks at the western end, but they cannot be distinctly made out.

"Upon the adjacent ground are heaps of broken granite,* which may possibly be the clippings of the rocks, originally intended for an external casing, but afterwards broken up, and carried away for other purposes. The fragments crumble to pieces on being handled, and are much decomposed and covered with moss, either from great antiquity or from an exposure, not only to the corroding air of the Desert,† but also to the moist winds of the Delta.

"Some other foundations are upon the same height, which has been already described to be composed of chalk, and which appears to have been *worked in very early times (as at present) for the sake of the flints embedded in it.*‡ The levelled space around the Pyramid is about 510 feet above the plain. The eastern and southern sides of the mountain are nearly perpendicular, and beneath it to the southward are ancient remains.§ The northern side has been sloped away, and an inclined causeway has been constructed from the plain below. It is 4,950 feet in length, 30 feet in breadth, and in some places nearly 40 feet high. About half of it is constructed of masonry.

"A valley to the northward extends to the Natron Lakes, and is the usual road of the western pilgrims from the Barbary Coast. Mummy pits and tombs were found in this valley,|| but they did not contain any inscriptions; the inhabitants of the neighbouring village, however, were said to have taken from them a variety of small articles, similar to those in the tomb of Gizeh, and mummy cases inscribed with hieroglyphics. At the edge of the hills, on the northern side of the valley, are traces of an ancient square building. It is called by the Arabs El Deir (*the Convent*),¶ a name, however, which is often indiscriminately applied by them to ancient ruins."

The learned author does not especially allude to the regular line of pits which surround the principal structure. At first sight, they look as if they had been sunk to strike same sub-

* In my diary I wrote "a strew of syenitic gravel, which grows to stones, blocks and slabs as you approach the ruins, shows where the costly coating has been destroyed by the hand of man—what men no one can say. Probably, as in the pyramids of Cheops and Cephren, the upper capping was of fine marmorine calcaire, while, for the lower revetment, Ethiopian or Lybian stone (granite) and dark Thebaic stone (Syenite) were used."

† I should rather say the Desert-winds laden with sand and dust.

‡ The italics are mine.

§ Such as the quarries and the "Slave's Cave."

|| The Chalky Valley, or rather gully, draining to the salt white plain northwards, shows the mortuary caves; similar features, as all know, appear under the Grand Incline of Cheops.

¶ El-Dayr, the Mona-tery.

terranean entrance or chamber. But, as they are double to the east or facing the valley, they suggest a multitude of subsidiary monuments; the truncated pyramids which usually surround the main structure. Nor is any mention made of the large oblong tomb crowning a detached rise to the left or west.

The notice of the flints is interesting. In the south-south-west of the Pyramid, Mr. Hayns, in 1876, came upon a hammer of basalt; small blocks of this stone, dark green and light green, hard, heavy, compact and sometimes sparkling, are scattered around the main ruins. Still later, Mr. Greville Chester picked up, above and east of the T-shaped chamber, a small, smoothed or polished celt, measuring about $1\frac{1}{2}$ inches across and broken at the base. Mr. Roland L. N. Michell, of Cairo, showed us the fragment of a greenstone hatchet taken from inside the T; and told me that he had rejected another as useless. The date of these finds reminds us of the Acropolis of Athens, where a multitude of small silex implements, knives and saws, have been found, suggesting that they were used till a late period. This time our search was rewarded by the discovery of what appears by its groove to be a rude hatchet; and of two *pereuteurs* (hammers) both much broken and injured. The upper surface is convex, to fit the hollow of the hand; the lower was originally flat, but hard work has made it slightly concave. For these rudest of rude articles we could divine no other use but that of acting hammer to the tools used in breaking up the granites and syenites.

We then returned to the Pyramids which, on this auspicious end of April, were crowded with visitors. May-day is ever a universal *fête*, and on it happened to fall the Greek Easter, when no Hellene in the land keeps sober, or, despite the most stringent police orders, can refrain from letting off squibs and crackers. After resting under the shadow of the "Forty Centuries," we were tempted by the cloudy morning and the cool weather to a second ride southwards. When our beasts had been watered and fed with barsim (*Trifolium Alexandrinum*), we did not think it inhuman to add 12 miles to the 10 already covered by the good little donkeys. We set off at 1.30 P.M., descending alongside of the Sphinx which, seen in profile from above, becomes truly ludicrous: a head terminating a straight-back rock like a log of wood, and a snub-nosed face, of which the flat-featured Guinea negro might be proud.

Passing the buttress of ruined masonry in the valley that forms the terminal incline of Cephren, we struck towards the three pyramids of Abú Sir. The word is a corruption of Busiris and the latter may be Pi-Osiris, city of Osiris, as Bubastis was Pi-Bast, city of Isis, the tabby cat. This suburb of Memphis,

distant four miles, has been variously placed at the little Fellah villages, *Kumm El-hamrá* (Red heap) and *Kumm El-Aswad* (Black heap) near the Great Pyramids. The inhabitants in Herodotus's day lived by swarming up the "Harams," as do the monkey-like Bedawin of the nineteenth century; but the Fellah is not afraid of long walks ending in "Bakhshish." The evident derivation of Abú Sir* from "Busiris," moreover, suggests that the latter was not so near the Great Pyramids as certain modern authorities would make it.

The southern road was a copy of the northern. Crossing the hills that form the left valley bank, we found ourselves in ankle-deep and distressing sand; while after 3 P.M. the Egyptian sun did not fail to make himself felt. This ugly line has the advantage of showing the *Zahr El-Sant* ("dorsum of the Mimosa"), a range of trees perpendicular to the river, and supposed to denote the northern dyke or causeway which crossed the Nahr Yúsuf; and a little beyond it a broad low wall, of brick and fine mortar, pretends to be a remnant of the southern feature. Joseph's Stream, the old westernmost channel of the Nile, has long ceased to flow, but it has left a deep depression, filled by every flood and not exhausted till the height of the dry season. There is a plan in the air for reconverting El-Jezirah into an island and of defending the Bolak suburb, upon which the stream impinges, by clearing out the hollow near the left bank crossed by the smaller or Gizeh bridge. The movement of the Nahr Yúsuf, and the disappearance of the old ford at Memphis,† should counsel prudence and the use of "groins."

From this point our *objectif* began to define itself, a large glittering white mound, capped by a uniform heap of huge stones. After riding 3 hours (= 6 miles), diminished on return to 1 hour 40 minutes, we dismounted at the *Zúwiyat El-Uryán*,

* Abú (father of) is made to enter even into European words, as Hippodrome, which becomes Abú Durum. Colonel Howard Vyse believes that there were two places of that name (Busiris) near the Pyramids (III, 6).

† The following notes on this ford, which probably depended upon a very low Nile, were supplied to me by Mr. W. E. Hayns, who quotes Sharp's "Hist. of Egypt," Chap. vii, §§ 6-7; and "Diodorus Siculus," Lib. xviii, 33:—

"6. Perdiccas, on the death of Cleomenes," &c. . . . "now led the Macedonian army into Egypt," &c. . . . "At Pelusium he was met

by Ptolemy, who had strengthened all his cities, and had left garrisons in them; and when he laid siege to a small fortress near Pelusium, Ptolemy forced him to withdraw his troops, and to retire to his camp. At night, however, he left his trenches without any noise and marched hastily towards Memphis, leaving the garrisoned town in his rear."

"7. In this bold, and as it would seem, rash step, Perdiccas was badly supported by his generals," &c. . . . "Perdiccas attempted to cross the Nile at the deep fords below Memphis. Part of his army passed the first ford, though the water was up to the men's breasts. But they could not pass the second ford in the face of Ptolemy's army," &c.

the Zowyet el-Arrian of Howard Vyse (III, 10). According to him this ruined Pyramid, which belongs to the Busiris group, is also "called by the Arabs El Medowareh" (*El-Mulawwarah*, the circular); and is "situated on an eminence near a sheikh's tomb, about three-quarters of a mile to the westward of the village, from which it takes its name." The Asiatic term means the "Oratory of the Naked (Shaykh)," the Adamical costume being a favourite with certain holy men of the Darwaysh. The present base measures about 300 feet, and it rises 61 feet above the rock; the latter has been scarped away before the northern front, so as to form on the eastward the usual inclined approach from the plain.

We read (*Ibid.*): "It is mentioned in the 'Description d'Égypte' (Vol. V, p. 12), in connection with two other buildings, the remains of which, after some trouble, were at length discovered; the one about half a mile, and the other about a mile to the northward of the pyramid in question, but they were so completely dilapidated that their original construction could not be made out; indeed, of the most perfect there were only to be seen a few stones, composing a parallelogram, twice as long as it was broad. The materials of the Pyramid of Zowyet el-Arrian have been quarried from the adjoining hills,* and consist of hard limestone, in which are many fossil shells. The rocks have not been squared nor laid in regular course, but form a sort of rubble work, in which clayey loam mixed with sand has been used instead of mortar. Great part of the building has been removed for the use of the neighbouring villages; and it is only where the sand has been taken away in search of materials, particularly at the north-western angle, that the masonry is visible.† The pyramidal form is entirely destroyed, and the general appearance of the ruin is that of a round hill.‡ No remains of a casing, or of limestone from the Mokattam, were discovered."

In a previous publication§ I erroneously made Prof. Lewis pick up, some four years ago at Halwán, a fine specimen of a saw about $2\frac{1}{2}$ inches long. The article in question was found upon the southern slope of the white mound which represents

* Meaning those west of the Nile. Thus it was never a Troici lapidis mons; the yield of the quarries where Menelaus, and his Trojan captives built the Vicus Trojanus (Torah).

† It is now reduced to a small heap of large stones; and presently it will altogether disappear.

‡ I should call it a mound.

§ See "Note on the Flints of Helwán," appended to Chapter ii of "The Gold Mines of Midian." Also the same mistake is made in "Flint Flakes from Egypt," *Journ. Anthropol. Institute*, Feb. '78. In the latter paper the scraper flake is figured.

the Pyramid of Righah (not Reegab). On the northern counter-slope, Mr. Hayns subsequently discovered a flake, which appears to be a scraper. According to Howard Vyse (*Ibid.* p. 10), "the Pyramid of Reegah (Righah) is situated on a hill, near the deserted village of Reegah, about three-quarters of a mile north-west of the Pyramids of Abouseir (Abú Sir); it is called by the 'Arabs' Harem el Abou-Goorob,* and is composed of masonry superior to that of the Pyramids of Abouseir. There appears to have been a temple before the eastern front, and a causeway communicating therefrom to another building on the plain.

"The Pyramid had been carried up in two inclines, like the southern Pyramid of Dashoor. The casing of the lower part was of granite, and had an angle of $75^{\circ} 20'$; that of the upper part, composed of calcareous stone from the Mokattam, had an angle of about 52° , the base was 123 feet, 4 inches square.

"Mr. Perring excavated in the centre of the northern front, and found amongst the rubbish fragments of stone which were rudely sculptured and coloured, and, in some instances, were marked with golden stars on a dark-blue ground, as if they had belonged to the ceiling of an apartment; he also met with some coarse earthenware pots, and a mass of brickwork erected close to the Pyramid, upon the broken casing-stones; fragments of which, composed of granite, were found near the north-eastern angle. As Mr. Perring did not discover an entrance to the northern side, he extended his researches, but without effect, to the eastward, where brickwork had been also erected over the broken casing, and where more coarse earthenware, consisting of pots and lamps of this shape (*a*), were found, and likewise some round pieces of black basalt from 3 to 7 inches in diameter.† Mr. Perring doubted the antiquity of the lamps. Several sculptured slabs were also discovered, upon one of which was the cartouche (*b*), represented in the plate."

Leaving the ruined Záwiyah, which stands well out from its background, the caverned cliffs of Torah to the east of Father Nile, we walked a few paces to the south-west, and ascended the eastern flank of the Righah mound. Here the digger had been at work opening hollows lined with dark adobe: these are supposed to be tombs; but the large grinding-stone before mentioned, which came to hand in the interior, rather suggests a village. The surface was everywhere strewn with pottery, hepatic silex and, curious to relate, with white quartz, showing an artificial fracture by "spalling." The people here ignore the

* I was told "Abú Turáb," the Father of Earth.

† This description would perfectly apply to the hammers which we picked up at Abú Rawásh.

classical Arabic word *Marú*, and simply call the rock *Hajar Abyaz* (white stone); water-rolled pebbles of the same material are to be seen all along the Libyan side of the Nile. Both must come from the Western Desert, a track utterly unknown to Europeans beyond the Western Jebel el-Khashab.* I promise myself, at the first opportunity, from ten days to a fortnight of tent-life in the Libyan wilds, and a careful examination of their peculiarities.

The summit of Righah commands a fine view of the Nile Valley stretching in front. Behind us Anubis, the jackal standing to gaze at us from his vantage-ground, the Desert Valley, was the fittest emblem of the place. After picking up the fragments of three silex flakes and a natural splinter that much resembles art, we returned by the eastern road. It runs over the black earth of the Nile which gave a name to *Kem* (Egypt); and here, at the depth of a foot and a few inches, the ant throws up tiny cones of the finest yellow sand. The scene was notably Egyptian. Large villages and scattered houses; palm-trees and cultivated fields; tanks and draw-wells, dykes and watercourses; horses and asses, camels and buffaloes, sheep and goats; men, women, and children in demi-toilets, quarter toilets, and no toilets at all, formed the items of the pleasant, prosperous, and peculiar picture. I was surprised by the plenty which appears everywhere, but it is only fair to own that much of this land belongs to the Pashas. And, as sunset approached, Cheops doubled himself by projecting, like a giant gnomon, his triangular shadow far over the subject plain.

We regained the carriage at 6 P.M., and after 36 miles of ride and drive, not including various walks, we returned to Cairo with our trophies: three hammers, three flakes, and three skulls from the Pyramid-Tombs. The day had been delightfully spent—a marvellous contrast with the dull monotony of eternal “Shepherds.”

On Friday, May 3, 1878, I set out with a small party to hunt flint flakes, on and about the Jebel el-Ahmar (the Red Hill); that low and jagged block of dark ruddy hue, igneous, where all the Arabian mountain is sedimentary, which forms so remarkable a feature among the pale tertiaries of the Cairine basin and desert. Half-an-hour's walk led to the venerable Bab el-Nasr, or Suez Gate, outside of which Háji Ibrahim bin Abdillah, the amiable Burckhardt, lies buried, under a tomb restored by the piety of Mr. Consul Rogers. Twenty minutes on donkey-back,

* At the Great Pyramids we were shown balls of sulphur pyrites, the size of musket-bullets, from the Oasis of Siwah, distant 15 marches. At least, so said Sagr (Sakr) the Bedawi, who collects “curios” from his wilder brethren and sells them to visitors.

over the dusty road and the sandy and gravelly surface, where the stone has been removed, placed us at the Wady, trending from south-east to north-west, and defining the occidental end of the ridge. Another quarter of an hour saw us upon its summit.

The Jebel el-Ahmar is a succession of natural pits and artificial quarries. The former, which break the surface into ridges, are the round and oblong funnels, so common throughout the Anti-Libanus, and the Carso of Trieste. The origin of these *Tallajat* (Arab.) or *busi* as the Istrians call them, the *Dollina* of the Slavs, is still doubtful. Some believe them to be blow holes produced by the escape of submarine gases; others attribute them to the action of water sinking through the cavities of the soil; while others, again, have suspected the coral insect. I looked in vain for the "core of melted quartz," which the *voz populi* of Egyptian travellers clothes with "ferruginous sandstone showing all kinds of colours." Here, numerous quarries have been worked for ages, and have caused the whole block to be seamed with paths, giving a fine opportunity of studying its lower horizons. The deepest show at the base, and extending for some way up the walls, a favourite material for the round and square millstones which cumber the ground. It is an exceedingly hard and crystalline sandstone of greyish-white colour; here it bears the old ripple-mark; there it is marked by wavy lines of iron oxide, or natural bead-work, water-rolled pebbles deep set in the rock; and many of the blocks are seamed with refractory quartz veins, trending north-west, south-east. On a higher horizon it passes into a distinct amygdaloid, the puddings often adhering to the crystalline masses. Here, too, are pieces of fine yellow and sandy matter, which stains the skin; it is collected for sale in barrels. Higher still occur thick veins of ochraceous formation, yellow and red, whilst the surface is composed of sandstones, also apparently heat-altered to the consistency of porphyries. These grits show the liveliest colours, the commonest being yellow, and much of it blackened as if by fire. Next to the yellow come the reds—crimson, vermillion, scarlet, bullocks' blood, and *crête de coq en colère*—and there are mauves and purples, with a beautiful stone marked red and white. An up-standing block to the south-west, cut into steps for millstones, bears upon the white sandstone base an upper stratum of brown grit, full of pebbles, loosely deposited, with many cavities, and yet the whole is hardened by igneous action.

On the Red Hills, as on the plain below, appear scatters of water-rolled quartz and a little silex, but no flint flakes were picked up. Unfortunately we came back by the wrong road, as we afterwards learnt from Dr. Giant, of the Sanitarium, Cairo.

Then issuing from the range, we bent to the right, instead of to the left; between the old railway of the quarries, whose metals have been torn up, and the water-tower that supplies the Cairene Citadel, at the north-western part of the Red Hills, some fine specimens of worked silex have been picked up, including a good spear-head, now in the possession of Mr. Roland S. N. Michell.

We rode back in 45 minutes, by the northern road, through the 'Abbásiyyah. Here a carriage can approach within a five-minutes' walk of the base, by driving up to the roofless Sakiyah, or "draw-well," which was allowed to fall to ruin when the tall water-tower had provided for the wants of the Citadel.

PART III.

The Bones.

So much for the Stones. I must here say a few words touching the Bones. The Palmyrene skulls, which have been honoured by the inspection of my highly distinguished friend, the venerable Professor Owen, were brought to England by the Rev. William Wright, long a missionary at Damascus. The little collection of Egyptian remains—three complete skulls with jawbones and sundry fragments—dates from November 11th, 1877, when I visited the Pyramids in company with Mr. Hayns and Colonel (now General) William Paget. Our attention was drawn to the "Tomb of Numbers," so called because inscribed with Egyptian numerals, and to other mortuary caverns hollowed in the limestone—a cliff forming the platform face where it projects farthest eastward. All are to the south of the great incline, whose head still shows a causeway running towards the Nile some 20 feet in breadth. Herodotus pronounced it to be a "work scarcely less wonderful than the Pyramid itself."

A subsequent visit on April 29th, 1878, produced three other skulls, one evidently mummified; they were procured for me by Shaykh 'Ali Gabri, of El-Kafr. As you approach the Great Pyramids by the bad new road, you leave on the right the small modern villages, probably ancient and classical sites, called the *Kumm El-Ahmar* and *Kumm El-Aswad*, the "Red Heap," and the "Black Heap," whose colours are a dark grey-brown. At the eastern base of "Cheops" lies *El-Kafr*, "the hamlet," a dependency of the *Kumm El-Aswad*, occupied by the settled Bedawin—an Irish bull, but a true description—who haul the Frank up the Pyramid. They call themselves *Urbán Nejmah*, and hail from El-Gharb or West Africa, a legend which explains

their pale skins and stalwart forms, their rough voices, and robes of white and black wool. They estimate that their five villages contain some 4,000 (400 ?) men, of whom many have now become Fellahin. Time and strict government have abated much of their ancient fierceness; the stranger has now nothing to fear save the begging, the importunity, and the dunning for "Bakhshish," bred by an ultra-Jewish greed of gain. Ali Gabri speaks good English, and is always ready to do justice between strangers and his tribe.

The skulls from Midian have been noticed in my second volume. They all come from the country below El-Muwaylah, which I have ventured to name South Midian. The first picked up was at Sharm Dumayghah, 30 miles north of El-Wijh; this large specimen was found upon the shore, and evidently belonged to some adjoining cemetery of the Bedawin. Three skulls and thirteen fragments were taken from the Moslem burial-ground at El-Bada, the Bada's of Ptolemy. The remaining three, of which one belonged to a woman or a child, were yielded by the graves lying behind the classical temple or shrine on the southern bank of the Wady El-Hamiz, the boundary between Egypt and the Hejaz. The poor remains of a beautiful little building, known as the Kasr Gurayyim Sa'id—the Palace of Sa'id the Brave—are described in my last volumes, "The Land of Midian Revisited."

My friend, Dr. C. Carter Blake, has been kind enough to examine all these remains, and the notes of so experienced a craniologist will, doubtless, prove highly interesting to you.

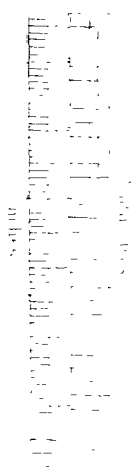
NOTES on SKULLS brought by CAPTAIN R. F. BURTON from the EAST. By C. CARTER BLAKE, Doct. Sci. (late) HON. FELLOW Anthropol. Institute, Lecturer on Comparative Anatomy and Zoology, Westminster Hospital School of Medicine.

- S. Palmyra; child's calvarium.
- V. Palmyra; skull in cerements, of young girl, with large parietal bosses.
- I. "Pyramid, April 29th;" child; only frontal and right parietal bone.
- O. "Pyramid, April 29th;" resinous heavy calvarium.
- P. Pyramid skull, Nov. 11th, 1877; low type of skull; small superciliaries; prominent ossa nasi. Coronal suture closed early. Lambdoid suture complex; wormian bone in left alispheno-parietal suture.

- Q. Pyramid skull, Nov. 11th, 1877; same type as above, but with fairer forehead.
- N. Pyramid; young. Acuminate canines and very small teeth; small mastoids, prominent ossa nasi. Large superoccipital, with well marked superior curved line.
- R. Uncertain locality; lower jaw, teeth worn. Large depressions indicating muscular strength, on external angle of jaw. Does not belong to Q.
- L. Sakkarah; female (?) child: about 12 years; high forehead, small mastoids.
- M. Sakkarah, east side 1878; oval skull, a symmetrical, complex lambdoid, small superciliaries, prominent ossa nasi united in middle, alisphenoido parietal suture narrow; deep grooves on frontal.
- T. "Shakkara Pyramid, Nov. 11th, 1877;" fractured skull with mandible. Right parietal and temporal with frontal and face bones alone definable.
- G. Dumayghah, *alias* Damghah (Pilgrimage), *alias* Demerah. Large male skull, broad alisphenoid suture, deep post-mastoid groove, palate long and deep, though much broken; only five teeth *in situ*, which are much worn, nasal bones curved and prominent, slight rainure sagittale; lambdoid suture, which has been complex, united at upper corner; posterior aspect of the skull subpyramidal, superciliaries large.
- U. (In dish) El Badá (*Badais*); 17 fragments of adult skull.
- J. Nabathæan from temple near Wady Hamz. (Figured on plate.)

Adult skull; Receding forehead, prominent proboscis, very prognathic. Wormian bone in sagittal, small superciliaries, supraoccipital bone very prominent, contains much recent matter, alisphenoido-parietal suture broad, foramen magnum large, palate very flat, teeth worn, ossa nasi very prominent, m 1 left in place, posterior teeth shed, right m 1 and m 2 in place (m 3 shed).

The characters of this skull are, when compared with those from other localities in the East, entirely *sui generis* ("Journ. Anthropol. Institute," Vol. I, 312). From the Palmyrene skulls hitherto described it differs by reason of the extremely flat palate. From all skulls of the Arabic, Shemitic, Turkish, Tartar, Greco-Roman races it affords marks of distinction in its greater proportionate length; and from Egyptian or Negroid skulls the form of the frontal bone, the breadth of the alisphenoido-parietal suture, and the apparent small size of the alveoli which have contained the third molars are characters which preclude its classification with any cranial forms which have been termed Hamitic. Yet



Scale. 1/2

NABATHÆAN SKULL FROM WADY HAMZ

the prognathous character, accompanied by the remarkable development of the upper part of the superoccipital bone lead us to infer that the position of the individual to which this skull belonged was inferior to that which cranial characters of Chaldean or Assyrian races produced. If this skull is that of a Nabathæan (and I am of course unable to say anything respecting its age) I have no hesitation in affirming that it presents features which, if exhibited in other adult individuals, indicate an exceptional race, and one which I have not previously observed from these localities.

H. From temple near Wady Hamz; child's calvarium, oval, large parietal bosses, broad alisphenoid, meatus auditorius far behind junction of coronal and sagittal sutures.

K. Nabathæan from temple near Wady Hamz; about 12 years old, m 3 in alveolus, alisphenoido-parietal suture narrow, speno-occipital suture open.

The theory which was originally offered by M. de Quatrefages, that some of the Palmyrene skulls ("Journ. Anthropol. Institute," Vol. I, 319) may belong to the Chaldean stock, which is "in part characterised by the absence of the occipital *lame* and crests, and by the continuity of the curve above and below the latter," indicates his idea that the race in which the occipital *lame* is greater than ordinary is further from the normal type, and in a different direction than a race in which the occipital *squama* was less than common. His ideal Chaldean has therefore nothing to do with the present assumedly "*Nabathæan*" skull.

NOTES on a SKULL termed "*NABATHEAN*."

By G. BUSK, Esq., F.R.S., V.P.A.S.

THIS skull, which is that of an aged man and apparently quite recent, as it has portions of skin still adhering, presents no very striking characteristics, unless it be the greater thickness and forward prominence of the malar bone and outer border of the orbit, which might be taken to indicate a Mongol or Tartar affinity. But to this is opposed the decided dolichocephalism and the want of any obliquity in the orbits, and the prominence or aquiline character of the nasals, &c. On the whole, I am unable to assign to it any distinct racial characters.*

* It appears, however, closely to resemble in most respects the dolichocephalic skulls from Palmyra described by Dr. Carter Blake ("Journal Anthropological Institute," Vol. I, p. 312, 1871), and which are regarded by Messrs. Marichard and Pruner Beg as "*Semite Phénicien*." The modern Syrian skulls would seem, from

Its dimensions, &c., are given in the subjoined table. The more essential particulars of its conformation may be thus briefly stated.

1. NORMA LATERALIS. (Fig. 1.)

The most striking characters afforded by this view are: 1, the lowness and reclination of the frontal region, and the very considerable production of the occiput, which commences just above the lambdoidal suture. The appearance almost suggests that the skull had been constricted by a bandage. The subnial surface of the occipital ascends but very slightly.

2. NORMA OCCIPITALIS. (Fig. 2.)

In this view the outline above is fastigiate, on the sides somewhat rounded and lofty. The occipital spine wholly undeveloped, and the occipital bone slightly pinched in laterally. The foramen magnum is horizontal.

3. NORMA FACIALIS. (Fig. 3.)

Orbits rectangular; malar region thick and prominent; nasals prominent not keeled, with an aquiline contour, orifice pyriform; maxillary spine very prominent; zygomata straight and long.

4. NORMA VERTICALIS.

Outline regularly oval, the widest part corresponding to the middle of the length of the parietals.

The sutures are all open. The bones generally thick and the entire skull is heavy.

TABLE OF DIMENSIONS, PROPORTIONS, &c.

1	Length	7.4	8	Zygomatic width ..	4.6
2	Breadth	5.3			
3	Height	5.5	9	Frontal radius ..	4.5
			10	Vertical „ ..	4.6
4	Least frontal width	3.8	11	Parietal „ ..	4.8
			12	Occipital „ ..	4.3
5	Greatest ditto	4.5	13	Maxillary „ ..	4.1
			14	Fronto nasal „ ..	3.8
6	Parietal width ..	5.3			
7	Occipital „ ..	4.5	15	Circumference ..	20.3

what is said by Dr. Carter Blake (*loc. cit.* p. 316), to be extremely brachycephalic. Whether this brachycephalism is due to Turkish, *i.e.*, Tartar blood, or is connected with an Arab descent, is an interesting point. The Hebrew skull is, I believe, usually brachycephalic; whether that of the cognate descendants of Ishmael is so or not, I am ignorant.

TABLE OF DIMENSIONS, PROPORTIONS, &c.—continued.

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OBSERVATIONS *on the COLLECTION of SKULLS sent by* CAPT. BURTON, F.R.G.S., &c., *to the BRITISH MUSEUM, SEPTEMBER, 1878.* By PROF. OWEN, C.B., F.R.S.

PALMYRA SKULLS.

OF the three skulls from Palmyra submitted to me by Capt. Burton:

One (A) includes the upper jaw and calvarium to near the lambdoidal suture. This indicates a long and narrow cranium; the profile and glabella are very similar to those of the Egyptian skull of the IVth Dynasty, figured in Vol. IV, Pl. XXI, of the “*Journal of the Anthropological Institute*,” but the frontal bone does not rise quite as high, and the cranium is narrower; the brain was less developed. The upper jaw is a little prognathic. The molar teeth offer the same proportions as in Fig. 2 of the Plate above cited.

The second skull (B) is of a female. The cranium is broader and the vertex higher in proportion to the length of the skull than in A. It is a small skull for a female, but the individual was adult, and had lost the right upper permanent mid-incisor before death, the socket being obliterated by absorption.

The third skull (C) is of a child; by the state of the dentition about four or five years old.

The racial characters of these skulls are those of the most ancient known Egyptians. They are not Australioid nor Papuan, nor Negroid, nor Mongolian; but of that somewhat negative type termed Indo-European, Aryan or Caucasian, of which the varieties are endless in relation to the manifold habitual exercises of the brain at the several phases of the Caucasian and Aryan civilisations.

EGYPTIAN SKULLS.

Of the series collected by Capt. Burton in the Necropolis of Ghizeh, D, E, and a few at Sakhara, F, not any of them deviate from the type figured (*loc. cit.*); in a degree supporting an inference as to racial distinction therefrom.

Not one is Australioid, Negroid, or Mongolian.

The skull D, marked "Pyramid, April 29th," shows a better cerebral development than the subject of Pl. XXI, Vol. IV ("Journal of Anthropological Institute.") It might have belonged to an individual of the intelligence and capacity of the subject of the famous statue in the Khedival Museum at Boulak, of which photographs were obtained by me, and afforded the subjects 1, 2, 3, of Pl. XX (*loc. cit.*).

The skull E might have been the subject of Pl. XXI (*loc. cit.*).

To note the minor diversities in proportions of breadth to length of cranium, development of nasal bones,* deviations from the flatness of the cheek-bones toward convexity, &c., &c., would be not more instructive than such annotations made on corresponding individual varieties which the "ossuary" of a British grave yard might furnish.

NOVEMBER 26TH, 1878.

JOHN EVANS, Esq., D.C.L., F.R.S., President, in the Chair.

The minutes of the previous meeting were read and confirmed.

The Rev. JOHN ROBBINS, D.D., was announced as a member.

Mr. WORTHINGTON G. SMITH exhibited a series of flint implements from the Valley of the Lea.

Mr. E. W. BRABROOK read a paper by Prof. DANIEL WILSON, LL.D., "On some American Illustrations of the Evolution of New Varieties of Men." This will appear in a future number of the transactions.

The following presents to the Library were announced, and thanks were ordered to be returned to the respective donors for the same:—

* See the extremes contrasted in skulls D and F.

FOR THE LIBRARY.

- From the INSTITUTE.—The Canadian Journal. Vol. XV, No. 8.
From the INSTITUTION.—Journal of the Royal Institution of Cornwall, No. XX.
From the SOCIETY.—Journal and Proceedings of the Royal Society of New South Wales. Vol. XI.
From the AUTHOR.—Remarks on the Sedimentary Formation of New South Wales, 4th edition. By the Rev. W. B. Clarke, M.A., F.R.S.
From the BERLIN ANTHROPOLOGICAL SOCIETY.—Zeitschrift für Ethnologie, No. 4, 1878.
From SIR JOHN LUBBOCK, BART., M.P., D.C.L., F.R.S.—Plan of the Maori Mythology. By John White.
From the SOCIETY.—Transactions of the Asiatic Society of Japan. Vol. VI, Part 2.
From J. PARK HARRISON, ESQ., M.A.—Essai de Classification des bruits Articulés. By M. Condeseau; Du Transformisme: Note sur le Squelette de Mention. By M. Le Marquis de Nadaillac; Du Mouvement de la Population en France et en Europe. By Miss de Nadaillac; Life in the Southern Isles. By the Rev. W. Wyatt Gill.
From the RIGHT HON. LORD ARTHUR RUSSELL, M.P.—Parliamentary Papers relating to the Colony of Fiji, Slave Trade, China, Mauritius, and South Sea Islanders.
From the EDITOR.—Revue Internationale des Sciences, Nos. 46-47, 1878.
From the EDITOR.—Revue Scientifique, Nos. 20-21, 1878.
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The following paper was read by the author:—

On the EVILS arising from the USE of HISTORICAL NATIONAL NAMES as SCIENTIFIC TERMS. By A. L. LEWIS, M.A.I.

PERHAPS there are few things that strike the Anthropologist more in reading the periodical literature of the time than the feeling shown by the writers that race problems have much to do with the every-day business of the world, together with the very imperfect understanding of the complex nature of those problems which is usually displayed, and the consequent ease with which they are sometimes settled on paper on the one hand, and the exaggerated importance and influence frequently attached to them on the other.

Thus, the French are usually written of as Gauls, and all their political and other difficulties are attributed to an inconstancy of mind, which is supposed to have marked the Gauls in the days of Cæsar. The Irish, again, are spoken of as Celts: a

denomination which is equivalent in some people's minds to all that is incomprehensible in human nature. In like manner all the inhabitants of the German Empire are called Teutons; the Russians and most of the inhabitants of South-eastern Europe are called Slaves; and the Italians and Spaniards are classed together as Latins; while the inhabitants of Great Britain and the United States are those Anglo-Saxons whose virtues have exercised so many journalistic pens, and are so great as to make the survival of police courts and prisons among them a mystery, and whose destiny is to exceed all other nations in power and glory.

The Anthropologist, however, knows full well not only that France, Germany, Italy, Spain, and the rest, are mere geographical and political expressions, and that each of these countries contains representatives of several different races, but that the mixture of races in most of these countries has been so great that representatives of different races may frequently be found in the same family, and through atavism, even among the children of the same parents.

But, though anthropological students have made this one step in advance of non-anthropological writers, they must not be supposed to have attained to perfect knowledge or agreement on all points. Thus, to go no further than our own islands, some maintain the Kymry to be a Celtic people, while others contend for their Teutonic origin and affinities; others, again, declare the Belgæ to have come from Gaul to Britain, while some hold that they were of British origin, and visited the Continent as successful invaders. Even the physical characteristics of Celts and Teutons are not unanimously agreed upon; while certain undefined Iberians or Atlanteans form another element of disturbance. As to the physical characteristics of these so-called races, it may indeed be doubted whether they ever will be settled; whether in the earliest dawn of the historic period the names of peoples did not, as now, signify political rather than ethnic differences: and whether the mixture of races, in Western Europe at least, was not almost as complete 2,000 years ago as it is now.

If this be so, it may be well for us further to consider whether we should not discard, once for all, the terms Kymric, Keltic, Iberian, Atlantean, Teutonic, Anglo-Saxon, Scandinavian, Slavonic, and Latin, concerning which we have wrangled so long and so often, and start an entirely new nomenclature, which shall, among other advantages, be free from the prejudices by which individuals who imagine themselves to belong to any one of these peoples are occasionally guided when writing of their historic opponents.

To make my meaning clearer, I will now endeavour to describe three of the leading types of the inhabitants of these islands, specimens of which may also be found in greater or less numbers among nearly all the nations of Europe, namely :—

First.—A long-headed, dark-haired, but light-eyed type, often having eyes which in some lights look black, but are really light grey or blue.

Second.—A rather broad-headed, dark-haired, and black or brown-eyed type, which may be identified with the Silures of Tacitus. Whatever the affinities of this type may be, they certainly are not what we generally understand by “Teutonic,” yet, if Mr. Motley’s description be correct, the “Silent” William of Orange, whom he has depicted as the great champion of Teutonic freedom and virtue, was a man of this dark-haired dark-eyed type : while Charles and Philip of Spain, who in Mr. Motley’s magnificent work appear as the incarnation of Latin and Celtic tyranny and evil, were, according to his description, very good representatives of the

Third, or Teutonic type, namely, men with light hair and eyes, and heads which in the pure type were probably broad rather than long.*

I do not for a moment contend that these three types are all that are to be found in these islands, much less in the Continent of Europe. I only point them out as varieties which may be readily recognised alike in the earliest pages of our history and at this very day in our streets, and it may be in this room.

It is no unusual thing to find representatives of any two of these types among the children of the same parents, while other children of those parents present a mixture of characteristics ; but it is probable that if the whole population were sorted out into groups in accordance with their general resemblance to one or other of these types (or any others that might be established), and those groups were kept separate, they would in a few

* (William of Orange) “had a Spanish cast of features, dark, well chiselled, and symmetrical. His head was small and well placed upon his shoulders. His hair was dark brown, as were also his moustache and peaked beard. His forehead was lofty, spacious, and already prematurely engraved with the anxious lines of thought. His eyes were full brown, well opened, and expressive of profound reflection.”

(Charles the Fifth) “his hair, once of a light colour, was now white with age . . . the eye was dark blue.”

(Philip the Second) “was the living image of his father, having the same broad forehead and blue eyes, with the same aquiline but better proportioned nose . . . his complexion was fair, his hair light and thin, his beard yellow, short, and pointed.”

Motley’s “Rise of the Dutch Republic,” Chapter i. This capital instance is of great importance, showing, as it does, that the greatest historical writers commit as grave Anthropological errors as the most obscure anonymous journalists.

generations revert apparently to the pure and primitive type. I say apparently, because every event has a certain permanent influence, however small, and the mixtures of so many centuries have been so numerous, that though the effect of any one may be imperceptible, the effect of the whole must be very considerable.

Let us for a moment look at another, but very practical side of the working of numerous and continual mixtures of races. Thirty years are usually allowed for each generation, and therefore twenty-seven generations have existed since the Norman Conquest. Now a man of the present generation had two ancestors living in the last, four in the preceding one, and so on to the twenty-seventh, when he would have had no less than $67,108,864$ ancestors living had not many of his ancestors of that age been common to his ancestors of succeeding ages; but if, in order to make ample allowance for this, we assume that each of us had, instead of 67,000,000, only 67,000 ancestors living at the time of the Norman Conquest, it is obvious that they probably comprised representatives of every race and nation then existing in the British Isles, if not in the whole of Europe; it is also obvious that the chances should be at least 67,000 to 1 against our reproducing any specially distinctive characteristic of body or mind of any one of our ancestors of that period, so that if any one of us could trace our descent in the direct male line to some one who "came in with the Conqueror," it is more than likely that instead of resembling his Norman ancestor in any way he might by the operation of atavism be an unimproved reproduction of some obscure Saxon serf of the period, while the man who boasts that his ancestors, whether British chiefs or Saxon thanes, were "at home when the Conqueror called," may himself, more likely than not, be a bad copy of some unknown man-at-arms who followed the Norman duke from the continent. While therefore the anthropologist must of necessity be a believer in "blood" and in the effects of race—that particular form of belief in blood which concerns itself solely with the direct ancestor in the male line (when he can be found)—and ignores the thousands of ancestors in female lines who have each a possible share in the formation of the individual, cannot be other than ridiculous to him. In other words, anthropology teaches us that, in mixed communities at least, every man must be judged by what he himself is, both in body and mind, and not by what any particular alleged ancestor of his may be supposed to have been.

With regard to mixtures of very different races, such as Europeans and Negroes, it has often been said that the children have the bad qualities of both races and the good qualities of neither, while on the other hand it has been often said of the

mixed European nations that the more mixed a nation is the greater are the qualities which it displays. But may not this apparent anomaly be due to the fact that a mixed nation commands the services of individuals of the different races of which it is composed, in the different departments to which they are best fitted, and to which, by a sort of natural selection, they make their way, rather than to any virtue or even practical effect of the mixture itself?

It may here be remarked, in passing, that the dark-haired but light-eyed type, the first which I mentioned, and which is probably the true Celtic type, is very generally confounded with the light-haired and light-eyed Teutonic type, and some great names have even been found to support the view that the Celts and Teutons were to all intents and purposes the same people, which indeed may be correct to this extent: that many tribes or political divisions 2,000 years ago contained representatives of both types, and that men of each of these types spoke the language belonging originally to men of the other type. Anyone may however with a little observation see that this dark-haired but light-eyed type is not the result of mixture, but a separate type, having other differences which might doubtless by study of modern skulls known to belong to it be recognised in skulls of ancient date and form a new key to unlock the mysteries of our burial mounds. Dr. Beddoe, writing on the Celts of Ireland (*"Journal of Anthropology,"* II), says "there is no exception to the rule that light eyes greatly preponderate, and that the hair tends to be very much darker than the eyes proportionately;" and again, "it is pretty clear, however, that the Celtic Gaelic type as usually represented" (on monuments) "was long-faced and long-headed, and that it differed notably from both the Iberian and the Germanic." Dr. Beddoe's admirable statistics go also to show that while only one in three of the inhabitants of England and Wales have dark eyes, three out of four have dark hair, and that in Cumberland (a Celtic county) in particular, only twenty-nine out of every hundred people have dark eyes, but eighty out of the hundred have dark hair: contrasting very forcibly with Teutonic Lincoln, where while the same number (twenty-nine out of every hundred) have dark eyes, only forty-six out of every hundred have dark hair. When we compare these statistics with the history of the counties, we shall, I think, hardly escape the conclusion that they are mainly peopled by different and not practically identical types.

Many serious errors have arisen from attaching too much importance to language as a test of race, but Anthropologists know very well that community of language is not a proof of

community of race, but only of association or contact of the various races by whom any given language is spoken. Language as a test of race is of little more value than tradition or religious or other customs, and, though it sometimes happens that all these point in the same direction, it sometimes also happens that they do not; all should have their due weight with other circumstances in deciding under what government this or that locality should be placed, but it is to be feared that language has in this matter been given an undue preference, and that several recent wars which have to some extent been waged on professedly ethnic grounds have, from an anthropological point of view, led to as much error as they have attempted to redress.

Thus, with regard to the unification of Italy, the anthropologist of all other men may truly say, "Italy is but a geographical expression." Geography, language, and religion no doubt favour the placing of Italy under one government, but no anthropologist would venture to say that all the Italians were of one race.

So too with the Germans, who are the strongest supporters of what may be called the philological school of anthropology. As in commerce large establishments are found to be the most economical and remunerative, so in government it is found that large nations offer large advantages, and the days of small nations and small establishments, much as we may for some reasons regret it, seem to be numbered; on this ground the unification of Germany may be regarded as a gain, but the suggestion of the national song, "*Was ist der Deutschen Vaterland*" that all countries where German is spoken are inhabited by the same race is shown to be entirely fallacious by the statistics of Professor Virchow.*

According to Professor Virchow an investigation of the schools in the German Empire showed that 33 per cent. (about one third of the children) had light eyes and hair; 13 per cent. (about one eighth) had brown eyes and hair, these being mostly in the South, while 54 per cent. (or more than half) had eyes and hair of different colours. Now it is admitted by Professor Virchow, as well as by Professor Broca and others, that hair darkens as its owner grows older, and it is therefore probable that of this fifty-four per cent. of "mixed" children a large number would belong to the dark-haired but light-eyed type, about which I have already said so much, and this would be in accordance with the fact that the skulls of Northern Germany are largely dolichocephalic. But if it should ultimately be found that more than half the inhabitants of Northern Germany

* "*Proceedings of International Congress, Buda-Pesth 1876.*"

belong to other races, what will be the value of much that has been said and written for and against the great Teutonic race?

The recent war, again, waged professedly for the liberation and unification of the Slavonic race, leads us to ask, what are the Slaves like? Dr. Beddoe tells us that they are people "of good stature and fair complexions, not so remarkable in these respects as the genuine Gothic races, as compared with whom they were evidently deficient in military qualities. Agricultural and pacific in their habits, as invaders they were remarkable for their ferocity and cruelty. That kind of volatile good humour which was consistent with and passed suddenly and almost causelessly into extreme savagery, and which was attributed now-a-days to the Cossacks, appeared to have characterised the ancient Slaves, and the tortures and massacres which heralded their permanent settlement south of the Danube, might in part account for the fact that we found their own type predominating there to so great an extent. They gradually exterminated or extirpated the prior inhabitants, whereas the Goths or Germans more often established themselves as a ruling caste. . . . So far as he had seen or heard, blue or grey eyes, and brown hair, predominated over darker hues, and he had seen flaxen hair even among the Bulgarians, who were generally a darker race."* Mr. Hodges tells us in "*Anthropologia*," that the Slaves vary, some having dark eyes and hair, and others, especially the northern Russians, flaxen, light brown, or red hair, which is simply saying in other words what I have maintained throughout this paper: that political and even linguistic divisions are quite different from those prescribed by physical characteristics. A correspondent of the *Standard*, writing professedly from Bucharest, on the 14th October, 1877, said of the Russian soldier:—"In an empire so vast as the Russian, peopled by so many races, one would expect to see a great variety of types. A private of the Archangelogorodskipouk from the borders of the Arctic Circle, might be supposed to differ exceedingly from the German of the Baltic provinces, or the townsman of Odessa, and immense differences there are, doubtless, but not in face, or build, or fighting quality; the Don Cossack is a type very marked, so of course is the Circassian and the Tartar, but the infantry-men seem as like as brothers. Nearly all are fair, with broad short features and yellow moustache, as a late ornament of manhood, and whole companies of stalwart peasants, averaging twenty-five years old, can show but a dozen beards among them. The Russian soldier is certainly plain, but one rarely sees the class of feature traditionally attributed to

* "*Daily Chronicle*," report of Paper read before Anthropological Institute, 1878 (not yet published by authority).

him; his eyes are not noticeably small, nor tight, nor wide-apart; his nostrils are not spread, nor his mouth prognathous to a remarkable extent; the character of his ugliness is quite European, and in any English regiment one sees a score of faces, in any German regiment, hundreds, that exactly reproduce the Russian type." It would seem, therefore, that while a great number of German-speaking inhabitants of the German Empire probably belong to non-Teutonic races, there is no practical difference, except that of language, between the other German-speaking inhabitants of the German Empire, who are looked upon as more purely Teutonic, and a very large number of Russian-speaking inhabitants of the Russian Empire—that the man, who by country and language is classed as a Slave, is not to be distinguished by any other means from some other man, who by country and language is classed as a Teuton, or even as an Anglo-Saxon.

I will now quote from this correspondent a few words which support Dr. Beddoe as already quoted, in showing how the frank, careless, good-humour, popularly attributed to men of this physical type may be reconciled with the black deeds too surely recorded against them in history:—"He" [the Russian soldier] "is perfectly ignorant, very stupid, very trusting in people whom he knows, and very suspicious of a stranger the world may be searched vainly to show men so brave and yet so peaceful, so resolute and so long-suffering but whilst giving the Russian soldier credit for gentleness and good-temper, he who watches him may doubt whether listlessness and want of moral activity be not truer causes of his excellent behaviour; Muscovite amiability will not endure much provocation; the man who will show such extraordinary temper where others would turn quarrelsome, is roused to pitiless fury at a certain point So, again, the Russ is generous under certain conditions only; he will distribute anything he does not want, but no one is more pitilessly selfish when his own necessities are pressing. . . . Those who saw the maddened fury of the troops after the battle of Nicopolis, the senseless rage with which they stabbed at knapsacks, blankets, anything that recalled the foe, would ask no testimony to believe that the wounded were massacred that day—they certainly were; but, when the passion of the fight has calmed, and the Russian soldier is himself again, nobody is more pleased than he to perform a little service for a prisoner."

To revert to the point from which I started. I may now give an instance or two from the daily papers, showing the ease with which they make anthropological mistakes, which would be laughable, were it not sought by their means to promote

or to justify some important and possibly disastrous public action.

Some weeks ago, one of our evening instructors, in the course of a lengthy article, stated that while George I had only one drop in thirty-two of "British blood," the Prince of Wales has only one in 2,028, the conclusion being that "when we consider this, we need not wonder if the British Nation should seem of less worth than the Empire of India," &c., &c.* The fallacy here is evidently in the use of the term "British blood," since most of the assumed possessors of that article are descended from people who came from the continent at a period more or less remote, and are of all manner of different races, but have in time become identified in interests and feelings with their adopted country, and in this way we can see that the Prince of Wales would be, as he undoubtedly is, a far better "Briton" than George I, our evening instructor to the contrary notwithstanding. The error is the more remarkable, as the same author informs us that "Americans are Britons yet by blood," or in other words, a few million German or other workmen emigrating to the United States become "Britons by blood," but a German prince emigrating to England remains a German, as do all his descendants.

Some little while ago, one of our morning instructors informed us that the word "insane," was "*sound Saxon*."† This astonishing conclusion was probably attained thus:—The Saxons, whoever they were, were mythically supposed to have used exceedingly plain and unmistakable language; but "insane" is an exceedingly plain and unmistakable word, and therefore "insane" is Saxon. This incident is a trivial one, but it shows the desirability of abandoning designations which in the course of centuries have been used in so many senses, and have incurred so many popular prejudices, as to have lost whatever meaning they originally possessed, and to have become not only useless, but misleading.

In conclusion, the principal propositions which I have endeavoured to establish are:—

1. That there were, at the first population of Europe, certain primitive races, of which I have attempted to describe three.
2. That these races are so mixed at the present day that representatives of them appear not only in most European nations, but in the same families, and among children of the same parents.
3. That, notwithstanding this mixture, and the effects which

* "The King's Own War," "Echo," 28th May, 1878.

† The "Daily News," in an article on Lord Carnarvon's reply to a deputation to the Colonial Office, about December, 1877.

it must permanently have, racial characters display an astonishing permanence.

4. That this mixture being so slow in its effects, and yet having become so general, has probably been at work for a very great length of time; so great, that the peoples to whom the earliest history of Europe introduces us, were probably nearly as much mixed as those of the present day.

5. That it is desirable to discontinue the use of the political names of those peoples as ethnic names, and to employ others based on the physical characteristics of the individual.

6. That while physical characteristics are the only basis for a true division into races, yet in any practical application of this division, the influence upon individuals of different races of a community of language, custom, history, or tradition, must not be lost sight of, although these things do not prove community of race, but only the contact at some time or other of the races to whom they are now common.

Finally, I would ask whether the time has not arrived when committees should be appointed by the various Anthropological Societies of Europe to define the leading types of the inhabitants of their respective countries, and ultimately to form an International Commission for the collation of their respective labours, and for giving to the types upon which they may agree a precise definition and nomenclature, free from the objections which may be and have been urged against nearly all the terms now in use. When this has been accomplished, and not before, we shall be entitled to consider that our studies have begun to crystallise into a science as worthy of the name as astronomy or geology.

DISCUSSION.

Mr. TYLOR agreed that the present designations of races often tend to perplexing results. As an instance, he cited the name of Kelts applied to the Bretons and Irish, unlike in many respects, and among others in temperament, the Irish being the received examples of a witty, vivacious, volatile race, while the heavy and melancholy Bretons were the exact opposite. Mr. Tylor thought that at present it often caused less mistake to follow the national names given by historians and geographers, than to use race-names. He recommended Mr. Lewis to continue his line of work by collecting a complete set of data, so as to make the classification of peoples possible to a greater extent than can at present be done.

Mr. R. B. MARTIN thought that the inquiry suggested by Mr. Tylor should include the change that has taken place in national characteristics. In surveying the course of history, it must be evident that a considerable variation has taken place in the estimate

in which different peoples have been held. In the time of the Romans the inhabitants of Italy were held to be of a stern, solid type, very different from the gay, mercurial Italians of to-day, and the same observation would apply to many other countries.

Dr. ALLEN THOMSON remarked that the same difficulties might be found in reforming the nomenclature of ethnology as in other branches of natural science. Names of races, as of natural objects, are handed down to us as having been appropriate at the time of their first adoption, and they often turn out not to be the best suited for the objects to which they are applied. But having come into general use, their entire change requires very serious consideration. According to the plan suggested by Mr. Lewis, it could only be after an extended and exhaustive inquiry into the whole range of ethnology by an international committee that any general change in the nomenclature could be expected, and it may be doubted if the changes would be satisfactory or meet with general approval. He would not deny the desirability of attempting to improve the nomenclature by rendering the names of tribes in any geographical districts as nearly as possible indicative of the races to which they may be traced, but it will probably be a safer plan to endeavour to check error in detail, and especially to define more carefully the meaning of the names employed, than to attempt an entirely new system.

After some remarks from the PRESIDENT and Mr. PARK HARRISON,

Mr. LEWIS said in reply that the great objection to the present names was that they were not merely inaccurate, but led to errors fraught with the gravest consequences to the whole human race, and he feared the only way to reform them was to improve them off the face of the earth altogether. What he wanted was to have certain abstract types carefully considered and defined, without regard to nationality, which types, to avoid any questions of a political or personal nature, might be known by numbers or letters rather than names. This having been done, an anthropological census might be taken of any country or district, and the relative number of each type to be found in it ascertained, and they would then have definite materials to work upon. This would, no doubt, require considerable combined effort, but, when done, would be satisfactory. The Bretons, cited by Mr. Tylor, certainly included two types, those of the south being very different in appearance from those of the north, and the inhabitants of Italy, cited by Mr. Martin, had certainly been very mixed even in the earliest historic period; it was quite probable that the same race might, under different circumstances, be swayed by different emotions, but the rough-and-ready description of a whole political nation, comprising individuals of various types, as vivacious and volatile, heavy and melancholy, stern and solid, or gay and mercurial, was, in his opinion, more likely to be wrong than right.

ANTHROPOLOGICAL MISCELLANEA.

THE PEOPLE INHABITING THE INTERIOR OF THE GREAT NICOBAR ISLAND.

LITTLE is at present known of the nature or affinities of these people; in fact, their actual existence is vouched for by little more than local hearsay, but such reports as have been received, have almost universally led to the conclusion that they formed part of a Negrito stock, allied to either the Andamanese or the Semangs of the Malay Peninsula, an opinion which I also expressed (Vol. vi, p. 212). Mon. de Roëpstorff having however given the result of his visit to this island, and his interview with one of these people, as proving that they were of "Mongolian" type, more uncertainty arose as to their identification. I had some few months ago the pleasure of an interview with General Man, late Governor of the Andaman Islands, from whom I sought information on the subject. General Man's testimony is very strong as to the Negrito origin. He visited the Great Nicobar in a vessel which had on board a number of Andamanese people. These were immediately recognised by the Nicobarese as resembling the inhabitants dwelling in the interior of their own island.

The Journal of our Institute having, during the last few years, contained many papers both on the inhabitants of the Andaman and Nicobar Islands, it is satisfactory to find that the plates illustrative of General Lane Fox's paper on a Collection of Andamanese and Nicobarese objects (Vol. vii, p. 434), have been the subject of some interesting comparison in the "American Naturalist" (Vol. xii, p. 697); Mr. F. H. Cushing, of the National Museum, stating that the harpoon-arrows common to the Alaska Eskimo "entirely resemble the formidable fishing spears of the Andaman islanders."

W. L. DISTANT.

THE JOURNAL
OF THE
ANTHROPOLOGICAL INSTITUTE
OF
GREAT BRITAIN AND IRELAND.

DECEMBER 10TH, 1878.

JOHN EVANS, Esq., D.C.L., F.R.S., *President, in the Chair.*

The minutes of the previous meeting were read and confirmed.

The following presents were announced, and thanks were ordered to be returned to the respective donors for the same :—

FOR THE LIBRARY.

From the AUTHOR.—*Man a Special Creation.* By Dr. William Sharpe.

From the EDITOR.—*Revue Scientifique*, Nos. 22 and 23, 1878.

From the EDITOR.—*Revue Internationale des Sciences*, Nos. 48 and 49, 1878.

From the EDITOR.—“*Nature*” (to date).

A paper, entitled “*Stones and Bones from Egypt and Midian*,” by Captain R. F. BURTON, F.R.G.S., was read by Dr. C. CARTER BLAKE. Communications on the Skulls brought over from the East by Captain BURTON were contributed by Dr. C. CARTER BLAKE; G. BUSK, Esq., F.R.S., V.P.A.S.; and Professor OWEN, C.B., F.R.S.*

* See “*Journal of the Anthropological Institute*,” Vol. viii, pp. 290-324.

Some AMERICAN ILLUSTRATIONS of the EVOLUTION of NEW VARIETIES of MAN. By DANIEL WILSON, LL.D., F.R.S.E., University College, Toronto.

UPWARDS of three and a-half centuries have elapsed since the discovery of America revealed to Europe an indigenous people, distinct in many respects from all the races of the Old World. There, as in the older historic areas, man is indeed seen in various stages : from the rudest condition of savage life, without any knowledge of metallurgy, and subsisting solely by the chase ; to the comparatively civilised nations of Mexico, Central America, and Peru, familiar with many of the most important arts, skilled in agriculture, and with a system of writing embodying the essential germs of intellectual progress.

The Western hemisphere, which was the arena of such ethnical development, had lain, for unnumbered centuries, apart from Asia and Europe : and so its various nationalities and races were left to work out their own destinies, and to develop in their own way whatever inherent capacities for progress pertained to them. But, this done, it was abruptly brought into intimate relations with Europe by the maritime discoveries which marked the closing years of the fifteenth century.

From that date a constant transfer of races from the Old to the New World has been taking place, alike by voluntary and enforced migration ; with results involving a series of undesigned yet exhaustive ethnological experiments carried out on the grandest scale. There alike has been tested to what extent the European and the African are affected by migration to new regions, and by admixture with diverse races. There can now be witnessed the results of a transference, for upwards of three centuries, of indigenous populations of the Old World to a continent where they have been subjected to many novel geographical, climatic, and social influences. There, too, has taken place, on a scale without any parallel elsewhere, an intimate and prolonged intermixture of some of the most highly cultured races of Europe with purely savage tribes, under circumstances which have tended to place them, for the time being, on an equality as hunters, trappers, or explorers of the vast forest and prairie wilds of the New World.

It is still a favourite opinion with certain writers that some of the inferior races, such as the Australian, are rendered infertile, or incapable of breeding with their own race, after sexual intercourse with Europeans. This has also been affirmed of the Maori, one of the most vigorous of savage races. But such results admit of ready explanation, without assuming any radical

diversities of race. The unrestrained sexual intercourse of the savage woman with such Europeans as are alone tempted to invite it, is most frequently accompanied with the communication of disease: under any circumstances calculated to prevent the propagation of healthful offspring, and peculiarly virulent when first introduced. Among the Maoris, another and no less potent cause of sterility is the habitual promiscuous intercourse of the sexes prior to marriage; and in the case of the female from a very early age. The like causes have been in operation among the indigenes of the American Continent.

Of the mixed African race of America, Dr. Nott, an experienced observer, has affirmed that all Mulatto offspring, if still prolific, tend to run out and become extinct when kept apart from the pure Negro or white stocks. He also states, as a further result of his own observation and study, that the mixed offspring of the Spaniard or other of the darker European races is hardier and more prolific than when the cross is with the fair Anglo-Saxon or German.

Further, he affirms that Mulatto women are bad breeders, liable to abortions, that their offspring generally die young; and that when Mulattoes intermarry they are less prolific than when one of the parents is either of a pure Negro or White stock. As a medical practitioner and a teacher, resident in the Southern States of America, Dr. Nott's opportunities of observation were great; but his conclusions are suggestive, at times, of the influence of the prejudice of race prevalent in the older slave States. For this fact, at least, is very noticeable—that, in spite of many disadvantages, the race of African origin has survived or multiplied in a hybrid succession; while the native indigenes rapidly disappear; and, indeed, this American Negro race seems to promise greater likelihood of perpetuity in the Southern States of North America than the Anglo-American.

Nevertheless, the tide of emigration from the Old to the New World flows on with unabated force, and with all needful diversities of Northern and Southern Europe to give to the experiment the amplest test. From Spain, Portugal, England, Holland, and France, as more recently from Germany, Italy, Poland, Norway, Denmark, and from Russia and Iceland, a continuous Aryan influx has been supplanting the native races of the New World for upwards of three and a-half centuries. It is a voluntary migration, in so far akin to that which followed in the wake of Roman decline, and replaced the decaying Celtic and Latin races with the uncultured vigour of the barbarian North. But in the Europe of the fourth and subsequent centuries, the degenerate inheritors of the civilisation of Greece and Rome were supplanted by hardy,

untutored barbarians, full of youthful vigour, but devoid of the higher elements of social progress; whereas, in America, purely savage races are being superseded by the inheritors of Europe's highest civilisation.

But abundant evidence points to the intrusion into Europe in prehistoric times of one or more races superior alike in physical type, and in the arts upon which progress depends, to the Autochthones, or primitive occupants of the soil: the men of its Paleolithic and Neolithic periods. Further indications have been assumed to point to the contemporaneous presence, in Britain, as elsewhere, of races of diverse type, and apparently in the relation of lord and serf: a natural if not indeed inevitable consequence of the intrusion of a superior race of conquerors.

In America the inaptitude of the native race for any useful serfdom has largely contributed to the introduction there of other and very diverse races from the opposite continents of Africa and Asia; so that now within a well-defined North American area, indigenous populations of the three continents of the Old World are displacing its native races. Still more, all three meet there under circumstances which inevitably lead to their intermixture with one another, and with the native race.

The results are of special interest to the Anthropologist. The Melanochroi, or dark whites of Western Europe, are assumed to represent a mixed race, the peculiar characteristics of which are accepted as indicating the intrusion, in prehistoric ages, of the fair, blue-eyed Aryans on an aboriginal savage race, of which the modern Australian may be accepted as the type, if not indeed the surviving representative.

The succession of races in prehistoric Europe is intimately related to the geological and archæological evidences of the antiquity of man. Special race-types are being definitely associated with successive stages of art. The Anthropologist now recognises the cymbocephalic skull as a characteristic type of Britain's premetallic period; while the brachycephalic skull is associated with works of the bronze period.

Yet it is in examples of the latter type that indications suggestive of the use of the cradle-board have been recognised: as in the Juniper Green skull, recovered in 1851 from a stone cist in the neighbourhood of Edinburgh, and figured in the *Crania Britannica*, Plate XV. It exhibits the same peculiar flattening of the parietal and occipital bones as is familiar in many American Indian crania, traceable to the use of the cradle-board in infancy; and thus points to the nursing of the Allophylian infant, in the nomad life of the brachycephalic Caledonian, after precisely the same fashion as that of the

Indian papoose at the present day. In this way, skulls recovered from modern Indian grave-mounds, and the practice still in use by the nomad tribes of the American continent, throw light on the habits and social life of Europe in prehistoric times. In both cases the flattened occiput is, doubtless, the index of nomadic habits; and has been noted by Gosse, Thurnam, Davis, and others, in skulls from ancient British, French, and Scandinavian barrows belonging to the later period of neolithic art, when traces of primitive metallurgy make their appearance. The form of the skull in itself corresponds to the predominant brachycephalic American type. But while the occipital compression is in some examples very marked, the absence of any corresponding depression of the *os frontis*, such as inevitably results from the modes of cranial modification adopted by the Chinooks and other Flat-head Indians of the present day, seems to show that the European form referred to is essentially different from that of the ancient Macrocephali, examples of which occur on historic sites around the Euxine and elsewhere in Southern Europe. It may be confidently ascribed to the undesigned pressure of the cradle-board on a head of brachycephalic type. But it is not infrequently associated with a later type of dolichocephalic crania, with subsequent modifications, all suggestive of the mingling of native and intruding races.

According to the simple theory of earlier historians, a complete eradication of elder races was assumed; and the historic races were regarded as supplanting and entirely superseding the prehistoric ones: as has actually been the case in Tasmania in our own day. But the ethnical phenomena implied in the classificatory terms of Xanthochroi and Melanochroi involve the survival in the highest type of European man of elements inherited from ancestral relationship with one or more primitive races of lower types.

Various terms, such as Iberian, Silurian, Cimbric, Finnish, and Turanian, have been applied to primitive types, as expressive of the hypothesis of their origin. But on turning to the American continent we see vast regions occupied exclusively until a comparatively recent period by tribes of savage hunters, upon whom some of the most civilised races of Europe have intruded, with results in many respects so strikingly accordant with the supposed evolution of the Melanochroi of the Old World, that we seem to look upon a series of ethnological experiments carried on upon the amplest scale, with synthetic results to a large extent confirmatory of previous inductions.

The intermingling of very diverse races at present taking place on the American continent includes some of widely diverse

types. There is seen the Portuguese in Brazil; the Spaniard in Peru, Mexico, Central America, and in Cuba; the African in the West Indies and the Southern States; the Chinese on the Pacific; the Frenchman on the St. Lawrence; the German, the Norwegian, the Celt, and the Anglo-Saxon: all subjected to novel influences, necessarily testing the results of a change of climate, of diet, and of social habits, on the ethnical character of each. There, too, alike in the red and the black races, are to be seen the results of hybridity carried out on a scale adequate to determine many important points calculated to throw light on the origin and perpetuation of very diverse races of mankind.

The growth of a race of hybrid African blood has been one of the results of the substitution at an early date of imported Negro slaves to supply the place of the rapidly disappearing Indians who perished under the exactions of their taskmasters. According to careful data set forth in the United States Census for 1850, the whole number of Africans imported up to that date cannot have exceeded 400,000. At present the coloured race—hybrids chiefly—of African blood numbers nearly 5,000,000.

This increase has taken place under very peculiar circumstances—partly favouring, and even forcing increase, but also in part very unfavourable to fertility. But giving the former element of stimulated increase its full value, and with every deduction for the influence of the pure stocks on such increase, it is difficult to reconcile such results with any idea of inherent elements of disease, sterility, and inevitable extinction affecting the hybrid coloured race.

Disease, physical weakness, and sterility in the most degraded class of Mulatto women may readily be accounted for. The recognition of their counteracting influences only renders the actual results the more significant; for the multiplication of the “coloured race” in spite of such impediments seems to be indisputable; and no adequate grounds have yet been adduced to justify the assumption that the millions of the so-called “coloured race” who so largely predominate in the Southern States, and flourish under climatic influences which beget in the white race exhaustion and degeneracy, are destined to extinction. They are, indeed, passing through a critical transitional stage, with the wonted effects of revolution on the feeble and inert; but they show no inaptitude for holding their ground under the novel circumstances of political and social equality.

But it is between the red and the white races that a more natural and unconstrained intermixture has taken place; and as a result of this a new race—as among the hunter tribe of half-breeds of the North-West—is seen in the very process of evolu-

tion. In the interblending of the European and the African races on the American continent both are of foreign origin, and subjected to novel climatic conditions; whereas in the mixture of the European and Indian races the latter are indigenous, and might be expected to supply an element of greater stability to the mixed race. Other causes, however, more than counterbalance any influences of the native element, and check the multiplication of the half-bred Anglo-American or Europidian. The two races thus brought together are at nearly opposite extremes in the social scale. On the one hand is the European inheritor of all the culture and appliances of the highest civilisation; on the other is a race of savage hunters in a condition closely analogous to the European savage of the neolithic period. It is indeed a subject of just interest to recognise in the native arts of the New World at the present time illustrations of much to which the attention of the European archaeologist is directed in the study of the prehistoric disclosures of the Old World. There, a people may still be studied in their primitive stone period; others in the rudimentary stages of metallurgic art; and others again, as in Central America and Peru, who are the inheritors of matured native arts of the potter, the sculptor, the weaver, the metallurgist, and the architect. But among the most interesting and instructive of all the races of the American continent are the ingenious natives of the frozen North. There, within the Arctic Circle, the Esquimaux can still be studied in conditions closely analogous to those which are ascribed to post-pliocene, if not to preglacial man. There, a people may still be seen with no other knowledge of metals than the rare acquisition of a fragment of malleable native copper, or of such iron implements as they derive from occasional intercourse with Arctic explorers. They are now, as ever, a bone and stone-using people, reproducing the same ingenious arts which characterised the neotechnic labours of the Cro-Magnon and Mentone workmen of Europe's reindeer or mammoth periods.

Among the savage aborigines of Western and South America may still be studied the neolithic arts of a stone age as genuine as that of Europe's prehistoric times; while there also are seen influences resulting from the abrupt intrusion of the matured metallurgic arts of Europe on the first crude efforts of the native savage with the virgin copper which he has learned to hammer into weapons and implements adapted to his simple wants.

Other and not less interesting ethnical illustrations are to be found in the native rudiments of ideography and letters, and the various stages of pictorial and hieroglyphic writing, progressing onward to the very threshold of true numerals and a phonetic

alphabet. But I purpose to limit myself now to the special phases of hybridity resulting from the meeting and mingling of races so diverse alike in all natural and acquired elements as the European, the African, and the aborigines of the New World.

It has long been taken for granted that the Red Indian race is doomed to speedy extinction and is being replaced by the purely intrusive races of the Old World. There is no question, however, that, from an early date, intermarriages have taken place between Europeans and natives, with the result of an offspring of mixed blood, admitted to full social equality with those of pure European descent. Garcilasso de la Vega the historian of Peru, was a descendant, through his mother, from the royal line of the Incas; and Ixtlilxochitl, the old historian of Mexico, was in like manner a native half-breed, and interpreter for the Viceroyalty of New Spain, in the first years of the seventeenth century. Such alliances have been regarded from the first with no such prejudices as tend to preclude all legitimate intermixture of the European and African races. Red Indian half-breeds have long mingled with the Anglo-American population, and shared with undisputed equality in all the rights and privileges they care to claim.

Nevertheless, such examples of a mixed race have till recently been regarded as altogether exceptional; and no one was prepared to question the assumption that the period is by no means remote when the aborigines of America will be represented only by the buried remains which may suffice to illustrate their physical characteristics as well as their crude native arts. But a growing feeling is now manifested in favour of the idea that the Indian is not wholly disappearing by extinction; but that, on the contrary, a much larger amount of healthful intermixture and consequent absorption into the predominant intrusive race has taken place than unobservant critics had any conception of; and that the native element is a factor in the population of the new world, destined to exercise a permanent influence on the Euromerican race. If so, and the result is to be the perpetuation of ethnical traits of the native American man in the descendants of the immigrant races by whom the vast forests and prairies of the New World are being converted to the uses of civilised man, it will be no more than has been already recognised in the dark-complexioned Whites of Western Asia and of Europe. There, indeed, we can only infer the process by existing results; but on the American continent it is seen to be actually going on under circumstances much less favourable than we may assume to have marked the Aryan intrusion into Europe, yet with results by no means insignificant.

In attempting to determine the approximate number of the Indian population either of the United States or of the whole North American continent, so much has been hitherto based on conjecture that it would be unwise to attach much significance to any apparent increase or decrease at successive periods of the aborigines, including those still living in a purely savage condition. But all that we know of the native tribes at the period of their first intercourse with the European intruders shows them to have been in a condition of unstable equilibrium. Hereditary antipathies were perpetuated, and the diverse nationalities were engaged in purposeless exterminating wars and massacres, so as to leave it doubtful if, in the great majority of cases, the natural increase compensated for the destruction then affecting the native races.

Foremost among the aggressive races of the Northern continent, when first brought under the direct notice of Europeans, were the Iroquois, a people intimately connected with the subsequent history of the French and English colonists of North America. They were a powerful confederacy of kindred tribes, full of warlike energy, and all the most prized virtues of the American savage. But their influence and aims were alike destructive; and we can trace to them the depopulation of nearly the whole vast area between the Atlantic and Mississippi. The great mountain chain of the Alleghanies perpetuates the name of the oldest tribe of the United States of which there is a distinct tradition. The fertile valleys of the Ohio and its tributaries were once occupied by their populous towns and villages. The traditions of the Delawares told that the Alleghans were a powerful nation reaching to the eastern shores of the Mississippi, when, in times anterior to any known history, they came from the West into the valley of the Ohio. But the Iroquois, who had established themselves on the head waters of the river system which has its rise immediately to the south of the Great Lakes, combined with the Delawares or Lenapé nation to crush the power of the Alleghans. The surviving remnant was driven down the Mississippi, and they disappeared as a distinct people. The very name of the Ohio is of Iroquois origin, and marks the eradication of the traces of the elder race by their supplanters.

The Susquehannocks, who appear to have been of the same stock as the Alleghans, next excited the ire of the Iroquois, and were in like manner exterminated. At a later date the Delawares became the object of their assault, and the name of the noble river on which they dwelt is the sole memorial of their former existence. So in like manner the Shawnees, Nanticokes, Unamis, Minsi, and Illinois, were vanquished, reduced to

the condition of dependent nations, or driven out and wholly exterminated.

When Cartier first explored the Valley of the St. Lawrence in 1535, he found large Indian settlements at Quebec and on the Island of Montreal, where Champlain, little more than half-a-century later, met with few or none to oppose his settlement. It is most probable that they belonged to the same Wyandot stock which was then retreating towards the Georgian Bay, or withdrawing into the western peninsula between Lakes Huron and Erie, to escape the fury of the Iroquois, who had nearly desolated the Island of Montreal.

The history of French and English settlement in North America is intimately associated with that of the people by whom all this was effected. Their indomitable pertinacity proved more than a match for all the diplomacy and military skill of the French; and as they arrayed themselves from the first in opposition to them, and maintained an uncompromising hostility at a time when the rival colonists of French and English origin were nearly equally balanced, the failure of the magnificent schemes of Louis XIV. and his successors to occupy North America, as Charles V. and Philip II. had held Mexico and Peru, is mainly traceable to their antagonism.

The Iroquois who thus assumed the mastery of a region equal in extent to Central Europe, and changed the whole character of the population of the American continent to the east of the Mississippi, consisted of five tribes or "nations"—the Oneidas, Onondagas, Cayugas, Senecas, and Mohawks. The Onondagas and Senecas claimed to be Autochthones, sprung from the soil on which they dwelt, to the south of the St. Lawrence. A third, the Oneidas, cherished a sacred legend connected with a stone still surviving in their country, in the State of New York, which they revered as the memorial of the Oneidas and Onondagas, both of whom, according to the legend, sprang together out of the ground on the banks of the Oswego River. To the confederacy of the Five Nations, a sixth, the Tuscaroras, was admitted in 1715, on their expulsion from North Carolina; and the Iroquois confederacy has since then been generally designated the Six-Nation Indians. But the term "Nation" is misleading, for at no time during their known history has the whole confederacy been estimated higher than 70,000.

This was the statement of La Hontan; but it appears to have been a mere guess. La Potherie, writing early in the eighteenth century, expresses his astonishment that some four or five thousand Indian warriors should make a whole New World tremble. In reality, even this over-estimated the numbers

of the dominant Indian race. Their audacity and self-reliance were marvellous. Again and again they were decimated by war, and more than once reduced by fully a half. In 1689, at the end of one of their fiercest struggles with the French, the English official estimate reckons their warriors at no more than 2,550; and within twelve years thereafter it numbered little more than a half of this. But they systematically recruited their numbers by the adoption of prisoners. The French *coureurs de bois* or "White Indians" also readily amalgamated with them; nor were instances rare of men of Dutch and English blood adopting Indian life. Hence one early source of mixed blood. Jean de Lambesville, a Jesuit missionary at Onondaga, wrote to Count Frontenac in 1682 that, during the past two years, the Iroquois had recruited their numbers by the adoption of upwards of nine hundred warriors into their tribe. Mr. Lewis H. Morgan, who has given the greatest attention to their history, doubts if they ever amounted to one-third of the highest estimated numbers. They were, moreover, a savage people, still practically in their stone period. Copper was indeed known to them as a kind of malleable stone; but it was obtained in too small quantities to effect any important change on the character of their implements or weapons, and they had no knowledge of metallurgy. The utmost extent of their art consisted in hammering the native copper into a rude axe-blade or tomahawk.

Yet this is the people who wrought such vast changes on the population of the North American continent in the seventeenth and eighteenth centuries. Before either the French or English had come into collision with the tribes to the west of the St. Lawrence, they had doomed them to destruction; and nearly the whole native population of Western Canada had disappeared. In the interval of 75 years between Cartier's first visit to Canada in 1535 and its exploration and settlement by Champlain, the country between the Ottawa and Lake Simcoe appears to have been reduced to a desert. The Wyandots, including the Huron nations on the Georgian Bay, are proved by their language to have been of the same stock as the Iroquois. But the two were at deadly enmity; and in the aimless furor of the latter, nothing would satisfy them but an exterminating warfare.

The English were at that date settled on the Hudson, while the French occupied the Valley of the St. Lawrence. The latter were thus naturally led to ally themselves with the Hurons, who were their neighbours, and with whom they specially carried on the barter for furs. The like motives induced the English settlers on the Hudson to take the side of the Iroquois. But before the English found special reason to court their

alliance they had accomplished their ends in Western Canada, had conquered the Algonquins, and nearly exterminated the Hurons. The Petuns and Neuters ere long experienced the same fate; the Eries, to the south of the great lake which bears their name, were in like manner driven out and disappeared. All this was the work of native aggression, wholly independent of European intrusion. It may suffice to illustrate what was going on elsewhere, and so to account for the sparsely populated condition of vast tracts of North America, which under more favourable circumstances are filling up with the millions of intruders from the Old World; yet not without some permanent traces of intermixture with the aboriginal race.

The entire Indian population of the United States, including Alaska, amounts, according to the latest estimates, to 383,712; that of Canada, according to the official report of 1877, is 99,650; making together 483,362. The idea of the inevitable extinction of the Indian aborigines long controlled all policy in relation to them. They were assumed to be doomed to disappear before the aggressive European intruders, scarcely less under the influences of direct contact with a progressive civilisation, than by means of exterminating border wars, or the vices and wrongs incident to the excesses of frontier life. The very prevalence of this idea long tended to beget results confirmatory of it. Even the benevolent exertions of the philanthropist and the Christian missionary were directed rather to ameliorate the condition of a race doomed to speedy extinction, than to fit them for sharing in the progressive civilisation of their supplanters.

But while it is obvious that native Indian tribes can no more hope to perpetuate their existence as a distinct race, unmingled with the surrounding population of settled states and provinces than the intruded settlers of diverse European origin can preserve their distinctive nationalities, it is apparent, in the latter case at least, that their merging into the common stock by no means necessarily implies their extinction. The Irish, the German, the French, and even the Icelandic and the Russian immigrant, is introduced among a population not so far in advance of himself as to preclude him from engaging on comparatively equal terms in the progressive struggle; nor are the diverse elements of race so marked as to attract any special attention to their interblending. But with the Indian it is wholly different. His habits, ideas, and mode of life have all to undergo a total change; and on any theory of the survival of the fittest, the chances are greatly against him. Multitudes accordingly do perish as the inevitable result of their being brought into contact with a civilisation which is alien to them; but a

growing conviction is now felt that over and above this, there does survive an element of intermingling native blood permanently affecting the Anglo-American population.

The evils resulting from the system of dealing with the Indian tribes long pursued by the United States have latterly attracted increasing attention, with the growth of new States and the extension of railways to the Pacific Coast. In 1870 a commission was appointed by Congress to report upon the more successful system of dealing with the Indian tribes of Canada; and they set forth as one result of their enquiry that "it is now an established fact that the Indians of Canada have passed through the most critical era of transition from barbarism; and the assimilation of their habits to those of the white race is so far from threatening their gradual extinction, that it is producing results directly opposite." In other words, they recognised as an apparently established fact, that so far from the Indians of the provinces of Ontario and Quebec now hastening to extinction, they show a numerical increase during the last quarter of a century. This idea is reiterated, as the result of further inquiries, in a Report on "Indian Civilisation and Education," dated at Washington, November, 24th, 1877; and it is set forth as an idea more and more tending to assume the aspect of an established fact, "that the Indians, instead of being doomed to extinction within a limited period, are, as a rule, not decreasing in numbers; and are, in all probability, destined to form a permanent factor—an enduring element of our population."

That wherever the American aborigines have been gathered together upon suitable reserves, and gradually trained to industrious, settled habits, as among the Six-Nation Indians, or Iroquois, settled on the Grand River, in the Province of Ontario, or where they have mingled on terms of equality with the white settlers, as within the old Hudson's Bay Territory on the Red River, they have after a time showed indications of endurance, is undoubted. But it is not even now sufficiently borne in remembrance that the increase is not that of a pure Indian race.

Prolonged friendly relations with the whites are everywhere accompanied with an admixture of white blood; and in the territory of the Hudson's Bay Company this has been followed by habitual intermarriage, and the growth of a numerous half-breed population, with many indications suggestive of the probable development of a permanent intermediate type, had the isolation of that remote region been perpetuated.

The rise there of an independent half-breed tribe, holding itself distinct alike from the Indians and the white settlers, was for a time a fact of singular interest to the ethnologist. It was the result of alliances, chiefly with Indian Cree women, by the

Hudson Bay men and the fur-trappers of the region. But the latter included two distinct elements: the one a Scottish immigration, chiefly from the Orkney Islands, effected by Lord Selkirk in 1811; the other, that of the French Canadians, who long preceded the English as hunters and trappers in the North-West. The contrasting Scottish and French paternity reveals itself in the hybrid offspring; but in both cases the half-breeds are a large and robust race, with greater powers of endurance than the pure-blood Indian. They are described by more than one acute observer as "superior in every respect, both mentally and physically;" and the same opinion is confirmed by nearly all who have paid special attention to the hybrid races of the New World. D'Orbigny, when referring to the general result of the intermingling of races, says, "Among the nations in America the product is always superior to the two types that are mixed." Henry, a traveller of last century, who spent six years among the North American Indians, notes the confirmatory assurance given to him by a Cristineaux chief, that "the children borne by their women to Europeans were bolder warriors and better hunters than themselves." Finally, of the hardy race of the Arctic Circle Dr. Kane says, "the half-breeds of the coast rival the Esquimaux in their powers of endurance;" and Dr. Rae informs me that there is a fine race in Greenland, half-Danes; and numerous half-breed Esquimaux are to be met with on the Labrador coast. They are taller and more hardy than the pure-blood Esquimaux. Dr. Rae always gave the preference to them as his guides.

In so far, however, as any progressive increase, alike among the Indians settled on reserves and in the half-breeds of the North-West, is a recognised fact, it is important to keep in view how far it is, strictly speaking, an augmentation of their own numbers. On the Indian reserves there is no room for question that the pure-blood Indians are disappearing, and on the older reserves they scarcely survive. A mixed race is growing up, gradually assimilating to the surrounding population, and so disappearing, not by extinction, but like the immigrant foreign population of Europe, by intermingling with the predominant stock.

The same causes tend to impede healthful development among one numerous class of Indian half-breeds, as in other cases of illicit intercourse between civilised and savage races. Scrofulous and syphilitic tendencies lead to the same results, and beget in certain cases infertility, as well as an increased death rate. But where the native and the intruding races meet more nearly on an equality, as among the traders of the fur country, or the farmers and graziers beyond the Rocky Moun-

tains, the result is intermarriage, with a healthy and vigorous offspring; and the same is seen where the civilised red man takes his place on the common equality of citizenship in the general community.

Dr. S. R. Riggs, an active philanthropist of the United States, thus writes of the Dakotas, on the Missouri River: "The more civilised and Christianised portions of our Dakota people are now coming more and more into contact with the better class of white people. Many families and individuals are becoming detached from their own people and merged with the whites. Some of them are mixed-bloods, and all such come to be counted as half-breeds. Many such families are now scattered through the State of Minnesota." Dr. Riggs accordingly recognises as a result of this, that many Dakotas and Sioux are settling on homesteads of their own and in other ways intermingling with the general community, followed by "a proper and desirable mixture of the races, the inferior being elevated and finally absorbed and lost in the superior."

From the first intrusion of the European at the close of the fifteenth century, this admixture of the races of the Old and the New World has been going on. In Mexico, Peru, Central America, the Northern, Southern, and Pacific States, and in Canada, it is the same. Along the borders of every frontier State a nearly exclusively male population is compelled to accept the services of the Indian women in any attempt at domestic life. The new generation presents a mixed race of hardy trappers mingling the aptitudes of both races in the wild life of the frontier. With the increase of population, and the more settled life of the clearing, the traces of mixed blood disappear; but it is to a large extent by absorption into the general stock.

The Cherokees are among the oldest civilised tribes in the United States, and presented in recent years the novel characteristics of an agricultural people of Indian blood, holding African slaves, and intermarrying with white wives. The following is a brief summary of their condition at the successive dates here given:—

In 1809, 12,395, about half mixed-blood: say, half-breeds, 6,100; whites (chiefly wives), 341; negro slaves, 583.

In 1825, 13,563 (increase 1,168); negro slaves, 1,277; ploughs, 2,923.

In 1876, 21,072; increase, 8,677 in 67 years.

But in justly estimating this increase, the white blood must be borne in remembrance as an important factor. Numerically it is so; for the census of 1825 included 68 Cherokees married to white wives, and 147 white men married to Cherokee women. It was inevitable, accordingly, that in 1852 the Indian Commis-

sioner should find, as he notes, "a visible increase in the number of half-breeds"; and if here, as elsewhere, the half-breed is the superior alike in physical and mental vigour, the tendency must be towards the displacement of the pure Indian stock, and the ultimate merging of the survivors into the predominant race.

It has also to be noted, in reference to the progress of the Cherokee Indians, that this was greatly retarded by the extent to which they became involved in the great Civil War: in itself a curious evidence of their assumption of an equal status with the intrusive European race.

The Iroquois still more distinctly illustrate the same phenomena in their more recent history. The Six Nations suffered greatly in the war of 1791, and still more in that of 1812; but in 1845 Schoolcraft reported of them: "Their population has recovered, and is now on the increase," and he states their numbers at that date as—In the United States, 4,836; in Canada, 2,106; total, 6,942. Ten years later, as appears from the census of New York State in 1855, their number stood as follows: Living on Indian reserves, 3,953; abandoned tribal relations, and living among the whites as American citizens, 235. Again, the census of 1865 shows those on the reserves to have increased to 3,992, without further note of those who had forsaken the Indian reserves, and cast in their lot with the general population. In common with all who had previously abandoned the isolation of distinctive race and nationality, they inevitably pass out of the range of such observation, and go to swell the numbers of American citizens, like any other naturalised immigrants; yet their disappearance is manifestly one of absorption, and not of extinction.

Of 27 teachers in the Indian State Schools of the New York State, nine are reported as Indians who have received a thorough education and training in the high schools and other educational institutions of the State; and in 1877 a demand was made for a special appropriation of funds for the training of native teachers. The native school at Cattaraugus, New York, was stated by the Commissioner of Indian affairs to have "an average daily attendance of 90 students. It is instructed by competent Indian teachers, and is in all respects a model school."

The Iroquois of Canada consist mainly of descendants of the loyal Indians who adhered to the British side in the War of Independence, and obtained grants of land in Canada. At the Mohawk settlement on the Grand River they still preserve the silver communion plate, the gifts of Her Majesty Queen Anne in 1711, "to her Indian chapel of the Mohawks," and so presented to them while they still dwelt in the valley of the Mohawk River, in the State of New York. Their numbers are thus re-

turned in the census of the Indian Department in four successive years, showing a progressive increase of 310.

1874	..	..	..	6,845
1875	..	..	..	6,893
1876	.	..	..	6,953
1877	..	..	..	7,155

In this statement are included different bands of the Iroquois on the Thames, the Grand River, the Bay of Quinte, and the St. Lawrence.

On the Grand River Indian reserves the evidences of civilisation are abundant in farm implements, stock, wagons, gigs or "buggies" and other carriages. Neatly-furnished houses also, with pianos, sewing machines, and other appliances of recent progress, no less markedly indicate rise in the social scale, and the growth of true domestic refinement.

The same is the case with the Mohawks on the Bay of Quinte. They are manifestly on the increase.

In 1874	they numbered	784
„ 1875	„	804
„ 1877	„	833

But at the same time it is to be noted that only two among the latter are recognised as of pure Indian blood. This admixture had begun before they left their native valley in the State of New York, and indeed had its commencement with their first contact with Europeans.

One interesting illustration of this is supplied by the history of *Stenah*, a Mohawk Indian's wife, the child of white parents, carried off by the Iroquois while still in the Mohawk Valley. She attained to nearly, if not quite, 100 years, knew no language but the Mohawk, and was a thorough Indian in sentiment and feeling. Her genealogical tree, drawn up for me by her grandson, showed a descent from her in all of 80, of whom 57 descendants survive, and 23 had then died. This suffices to illustrate the influence resulting from one source, familiar to border life, of the kidnapping of white children by the Indians; as well as from that other, already referred to, of adopting whites as members of the tribe.

The Hurons, who dwelt chiefly in the region along the great lake which still perpetuates their name, though among the most implacable enemies of the Iroquois, were of the same stock; and, like them, cultivated the maize and other agricultural products to an extent unknown among the ruder Algonquin tribes. The latter are distinguished from them by a radical difference of language; but common interests brought the Hurons into close alliance with them against their own Iroquois kindred.

At the close of the sixteenth century the whole of Western Canada was occupied by Huron and Algonquin tribes, and in 1615 the Huron country was first visited by Champlain.

The early notices of this people have a special interest for us. The route of Champlain, by the river Ottawa and the numerous lakes which lie scattered between it and the Georgian Bay, had led them through savage wilds, sparsely peopled by the Ottawas, Nippisings, and other Algonquin tribes. When at length they reached the fields of maize, and the cultivated clearings of the Hurons, they seemed, in contrast to the wild region of the rude hunting and fishing tribes, to exhibit the industry and wealth of a civilised people. Like their Iroquois kinsmen, they dwelt in palisaded towns; and though still in a condition far removed from any true civilisation, they were among the most remarkable of all the Indian communities of the northern continent. Yet only an interval of 34 years transpired between this first glimpse of their forest towns and cultivated fields, with a population variously estimated from 20,000, to upwards of 30,000 souls, and the reduction of the whole region to a desolate waste.

The French, as has been already noted, allied themselves at an early period with the Hurons against their Iroquois foes; and the Jesuit missionaries were indefatigable in zeal for the conversion of the former to the Catholic faith. But the Iroquois proved the more powerful and crafty of the two; and in 1649 the Huron country was desolated by them, its towns committed to the flames, and a little remnant carried off by the French to Quebec. Even there the Hurons did not escape the implacable enmity of their Iroquois foes. But at length the survivors were established at the Indian village of La Jeune Lorette, on the River St. Charles, and there, after an interval of upwards of two and a-quarter centuries, the census of 1877 reports them as numbering 295.

But they have, to a large extent, lost their language, and substituted for it a French patois; they are Roman Catholics in creed, and have not only ceased to be of pure Indian blood, but they have so largely partaken of the hybrid traces of the predominant race, that were it not for the artificial restraints consequent on their claim to certain allowances and property, as the representatives of the Huron refugees of 1649, they would speedily merge into the common stock, and indeed might disappear, as Indians, almost in a single generation.

Père Bolduc, an intelligent French priest familiar with several of the Indian languages, and fully informed as to the present condition of the little community at Lorette, thus writes: "There may be two full-blooded Hurons, very aged, still existing in La Jeune Lorette, but even these are of ques-

tionable purity." Another correspondent writes of them: "The fact is, it would be misleading to affirm that there are any Indians at Lorette now at all. Some of the so-called Hurons are as fair as any Frenchman, and in many of them you only discern traces of the Indian features. They are undoubtedly the descendants of the Huron refugees of the seventeenth century, but they are far more Canadian than Indian." The result is no more than might have been predicated of the little band of Indian converts maintained for upwards of two centuries in the midst of a friendly foreign race. Nevertheless, it is obvious that it has perpetuated the traits of Indian blood under very unfavourable circumstances; and the present condition of the survivors is in no degree indicative, either of the degeneracy, or the speedy extinction of the half-breed representatives of the old Huron tribes of the Georgian Bay.

But the intermingling of the Hurons with the white race is very partially accounted for, if observation is limited to the community tarrying on the Indian reserve. On a recent visit to the chief Tahourhenche, or Francois Xavier Picard, at La Jeune Lorette, I learned that two of his daughters were married to French Canadians, and a third to a husband of Irish nativity, while his son has wedded a Scottish-Canadian woman. The inevitable result is instructive in its bearing on the question of the unheeded development of a mixed Euromerican race. The offspring of the alliance of the son, Paul Picard with Jane Smith, his Scoto-Canadian wife, will be reckoned members of the Huron community; while those of the daughters, though equally of Indian blood, will follow the fortunes of their fathers, and merge into the general population. As a rule, moreover, Canadians marry, as in the above case, generally with the most prosperous and well-conducted members of the Indian community, and thus not only reduce its numbers, but withdraw from it the more energetic representatives of the aboriginal stock.

I have procured the statistics of eighteen recent intermarriages of Hurons of La Jeune Lorette with whites, including the members of Chief Picard's family. The results are as follows: Ten French Canadians are married to Huron Indian women. One Scottish-Canadian and one Irishman are also married to Indian women. Five Huron Indians have married French Canadian wives; and one Indian, the chief's son, has wedded a Scoto-Canadian wife. Of those the families of the twelve Indian mothers will merge into the general population, and their aboriginal affinities be lost sight of in the second generation. Only those of the six Indian fathers, who retain their interest in

the tribal reserve, will be reckoned as belonging to the Huron community. This may serve as an illustration of the process which has been going on for upwards of three centuries over an ever increasing area of the New World. Yet still, as seen among the great majority of the survivors on the Huron reserve, they retain the modified Indian features and complexion, along with certain marked traits of Indian character; thereby proving the enduring character of the native element, and the influences which it is calculated to exercise on the Anglo-American race. For in the Huron half-breeds of La Jeune Lorette we see the Indian traits surviving in the mixed race, after an interval of 228 years of intimate contact with the predominant European race.

To revert, then, to the process thus illustrated: everywhere colonisation begins with a migration of males. It was so in the primitive dawn; in the intrusions of the barbarians on declining Rome, and of the Danes and Northmen on France and England; and so it has been in the earlier settlements of the American Continent, as it still is in the first occupation of every new territory there. Each septennial census of the United States continues to show a great excess of males in the new States, and of females in New England and other old settlements. The same process has been going on along all the frontier clearings from the very beginning of the sixteenth century, with the inevitable result of intermarriage with native women.

Even the wild native races of the Far West have been considerably modified, where to the superficial observer they remain unchanged. Mr. Lewis H. Morgan, whose opportunities of personal observation among the wild Indian tribes of the United States have been great, thus writes to me of the Kaws of Kansas, the Sauks, the Pawnees of the Upper Missouri, and others of the Indian races still reckoned as of pure blood: "All of those have taken up white blood in past generations, and the rapidity of its dissemination after a few generations needs no proof. I think they have taken up enough, through the traders and frontier men, since 1700, to lighten their colour from one-sixth to one-fourth."

In New England, after the war of 1637 and the extinction of the Pequot tribe, Winthrop states: "We sent the male children to Bermuda, and the women and maid children are disposed about the towns." The result of such a state of things is inevitable in a young colony with the wonted preponderance of males. It is the same process which went on in prehistoric Europe. Doubtless to a large and ever increasing extent, the red race is actually disappearing by positive extinction. But also, to a larger extent than has been hitherto recognised, it is blending by

a process of absorption into the dominant race, not without leaving some enduring influence on the European-American population, both of Canada and the United States.

In the North-West Canadian territory and throughout British Columbia, the population is still of a mixed character, consisting almost entirely of males. Such a state of things as the following is common:—Of 206 settlers at Port Douglas in 1860, only two were females. At Kamloops, on the Thompson River, four women and two little girls were the whole white female population of a prosperous agricultural settlement, when visited by Mr. Sandford Fleming and the surveying party of the Canadian Pacific Railway in 1872. Those may be accepted as fairly representing the normal condition of society in the pioneer settlements of the New World. Alliances with the native women are accordingly inevitable; and on every farm or ranch, a family of half-breed children is growing up, familiar only with the ideas and habits of the European settler; and destined, like the half-breeds of Manitoba, to mingle on perfect equality with the civilised community.

Around every Hudson's Bay factory, a similar half-breed population exists; and throughout all the tribes in contact with them the evidences of mixed blood are obvious. Mr. H. W. Elliot, in reporting to the United States Commissioner on the recently acquired territory of Alaska, says: "The Aleuts, as they appear to day, have been so mixed with Russian, Koloshian, and Kamschadale blood, &c., that they present characteristics in one way or another of the various races of men, from the Negro up to the Caucasian." In 1870, Mr. W. H. Dall estimated the Creoles or half-breeds of Alaska at 1,421, including priests, government officials, and others on a perfect equality with the civilised settlers of European origin.

The later policy and legislation, especially in Canada, expressly aims at the adoption of the civilised Indian into the general community. Provision is made in recent Acts for admitting him to all the privileges of citizenship, in the same degree as is permitted to any European immigrant. But already this had been long secured to men of mixed blood.

During the French occupation of Canada, with the zealous endeavours of the Jesuit and Recollet Fathers for the christianising of the Indians, and the general preference for the hunter life, and a trade in peltries, to the more settled occupation of the agriculturist, a large mixed population grew up, and intermingled on terms of perfect equality with the French Habitans. The slow growth of the colony under French rule made every addition to its settled population welcome; and hence Colbert, in 1660, and Talon, the French Intendant of

Louis XIV, in 1667, both refer to the race of New France sprung from Indian mothers as "a valuable element of the population;" and special reports are made as to their fertility, endurance, &c.

The religious sentiment among a purely Roman Catholic population helped to foster ideas of equality. The gentler social elements of the Frenchman also tended to his more ready adoption of a native wife. Hence, traces of mixed Indian blood among the Habitans of the Province of Quebec are especially common. One intelligent observer, long resident in Lower Canada, thus writes to me: "I do not think that people generally realise the great extent to which there is an infusion of Indian blood in the French Canadian population. In the neighbourhood of Quebec, in the Ottawa Valley, and to a great extent about Montreal, I hardly think among the original settlers there is a family in the lower ranks, and not many in the higher, who have not some traces of Indian blood. At Ottawa, where we have a large French population, I hardly meet a man—and the women show the traces even more readily—where I should not say, from the personal appearance, that there is a dash of the red man." I have observed, moreover, that this reappears from time to time in individual members of a family or in younger generations.

In the older provinces of Canada, as in the United States, the numerical predominance of the European stock, and the constant influx of fresh immigrants, necessarily obscure the mixed native element; but in the great prairie region of the North-West the predominant native stock has placed the two races more in the condition in which they are to be met with in many parts of Mexico, Central, and South America. In Brazil, for example, Mr. Ribot says: "Men of mixed blood, of all degrees of hybridation, are numerous, forming a new population, which is ever growing more indigenous and coming nearer to the white type; and judging from what is taking place all over South America, they will finally absorb all the other elements of the population."

The new province of Manitoba occupies part of the old hunting-ground of the Hudson Bay trappers; the original population is a half-breed one, and it has begun its political existence with a population numbering from 10,000 to 12,000: a hardy, resolute, independent race of civilised hunters and farmers, the offspring of red and white parentage. This is in addition to the much larger number of children of mixed blood, who, following the fortunes of their Indian mothers, grow up members of the nomad hunter tribes. There, more than elsewhere, is seen a condition of things analogous to that which may be assumed to have

produced the Melanochroi of Europe's prehistoric ages, when the intruding Ayrian first came into contact with Allophylian tribes of that neolithic period; and the arts of the metallurgist were—as now in the unsettled territories of the New World they still are to be seen,—slowly superseding the ingenious processes of a purely stone and bone, or of a native copper period.

JANUARY 7TH, 1879.

JOHN EVANS, Esq., D.C.L., F.R.S., *President, in the Chair.*

The minutes of the previous meeting were read and confirmed.

The following new members were announced—OSBORNE CHARLES VYCE ALDIS, Esq., and E. FAIRFIELD, Esq.

The following presents to the Library were announced, and thanks were ordered to be returned to the respective donors for the same:—

FOR THE LIBRARY.

From the ACADEMY.—Bulletin de l'Académie Royale de Belgique, Tome XLI, XLV; Mémoires Couronnés et Autres, do., Tome XXVII and XXVIII; Mémoires Couronnés et Mémoires des Savants Étrangers, Tome, XL-XLII 4to.; Annuaire de l'Académie Royale de Belgique 1877-78.

From the SOCIETY.—Bulletin de la Société Impériale des Naturalistes de Moscou. No. 2, 1878.

From the SOCIETY.—Jahrbuch der K.K. Geologischen Reichsanstalt. Vol. XXVIII, No. 3; Verhandlungen ditto—Nos. 11 and 13, 1878.

From the SOCIETY.—Mittheilungen der Anthropologischen Gesellschaft in Wien. Vol. VIII, Nos. 5-9.

From the SOCIETY.—Transactions and Proceedings of the Royal Society of Victoria, Vols. XIII and XIV.

From the AUTHOR.—Ethnography and Ethnology. By Elie Reclus.

From the SOCIETY.—Proceedings of the Royal Geographical Society. Vol. I, No. 1.

From the SOCIETY.—Proceedings of the Royal Society. Vol. XXVIII, No. 190.

From the AUTHOR.—The Claims of Psychology to admission into the Circle of the Sciences. By Mr. Serjeant Cox.

From the EDITOR.—Revue Scientifique, Nos. 24-27, 1878.

From the EDITOR.—Revue Internationale des Sciences, Nos. 50-52, 1878.

The following paper was read by the author:—

A REVISED NOMENCLATURE *of the* INTER-OCEANIC RACES *of*
MEN.

By Rev. S. J. WHITMEE, F.R.G.S., C.M.Z.S.

THERE is much confusion in the use of Geographic and Ethnographic names in the Pacific. For example, the name Polynesia is used in different senses by different writers. Some employ it as a geographic term for all the intertropical islands eastward of New Guinea and Australia. Others employ it only for those islands which are eastward of Fiji; and they use Melanesia and Micronesia for those islands which are south and north of the equator from Fiji westward. Those who use Polynesia in this restricted sense, employ it also as an ethnographic term for the brown race of men inhabiting that region. Others who give it the wider signification sometimes speak of the narrower region as "Polynesia Proper," and of the people living there as "true Polynesians." I have always employed Polynesia as a geographic term for all the intertropical islands eastward of Australia, New Guinea, and the Philippine Islands; while I have used Melanesia, Micronesia, and Malayo-Polynesia for the ethnographic divisions of that region.

While adopting these names, I have never been satisfied with them; but have tried to find some good distinctive terms which could be uniformly employed and which would commend themselves to the judgment of geographers and ethnologists generally. In the hope that I may contribute something towards a satisfactory settlement of this difficulty, I venture to present this paper to the Institute. I trust members and others interested in the subject who are present, will freely offer all the reasonable objections they can to my proposals, and suggest anything better which may occur to them. My wish is not to force my own proposals, if others better than mine can be found. I am anxious that we should have a good discussion which will result in fixing on such names as may be readily accepted by men of science generally both in Europe and America.

The present appears to be a good time for making a change in names, if one is to be made at all. The islands, people, and languages of the Pacific are now attracting a fair share of attention; some books are about to be published which will probably be standard works on the geography, ethnology, and philology of the Pacific throughout the civilised world, and these may fix the names used in them for all educated people. To mention only one work which will be shortly published in this country—there is Mr. Wallace's volume on Australasia

and Polynesia in Mr. Stanford's Compendium of Geography and Travel. It is of the highest importance that in that book corrected names should be used, and not the old unsatisfactory ones we now have. And I am happy to know that the nomenclature we fix on here to-night will in all probability be adopted in the ethnographical portion of that volume.* Indeed, it is mainly owing to Mr. A. H. Keane, B.A., who is preparing the ethnological appendix to the book, that I have ventured to take up this question to-night. He suggested to me the principle which has guided me in forming the new names I have to propose, and also proposed some of the details which I have adopted.

Before entering on the ethnographical portion of my subject, I have one suggestion with regard to geographical names to make, viz.: that Polynesia should be the one and only name used for all the intertropical islands of the Pacific, eastward of the Philippines, New Guinea, and Australia; and that Micronesia and Melanesia, as geographical terms at any rate, be no longer used. Micronesia does not include anything like all the small islets in the Pacific. There are more than eighty atolls in the Tuamotu archipelago alone; and there are others elsewhere which certainly ought to come under Micronesia if such a term be used at all. And Melanesia as now used is not contemporaneous with the race of men for whose sake it was manufactured. If Polynesia be adopted as the one geographical name for all the intertropical islands of the Pacific, it will be as easy to indicate wide districts by east and west, north-east and north-west, as it is thus to indicate the different parts of a continent.

Coming now to the ethnographical names, for the sake of completeness I include in this survey Australasia, the Indian Archipelago, Madagascar, and Formosa, as well as Polynesia. Adopting a suggestion of Mr. Keane's, I have called the people inhabiting this whole region the INTER-OCEANIC RACES. It is convenient to have a general term to use in speaking of these people as a whole; and perhaps this name will serve that convenience.

Inter Oceanic Races of Men.	{ Dark Races. ? Negrito- Polynesian.	{ Austral .. Australia.	
		{ Negrito .. { Andaman Islands. Samang, &c	
		{ Papuan .. { Aru Islands. Western New Guinea Western Polynesia.	

* The names suggested in this paper have not been used in Mr. Wallace's book. See his remarks in the discussion

Inter Oceanic Races of Men.	{ Brown Stock. Malayo- Polynesian.	Sawaiori ..	{ Samoa. Hawaii. New Zealand, &c., &c.
		Malagasy..	Madagascar.
		Formosan	Formosa.
		Malayan ..	{ Malays of Sumatra, &c. Javanese, &c., &c.
		Tarapon ..	{ Caroline Islands. Marshall Islands. Gilbert Islands.

There are two broad and very distinct divisions of these people which appear on the surface : the *Dark* and the *Brown* races ; the Dark occupying Australia, the Andaman Islands, portions of the Indian Archipelago, and Western Polynesia ; the Brown being found in Madagascar, the Indian Archipelago, Formosa, North-Western and Eastern Polynesia, together with New Zealand.

It is an open question whether it is necessary or expedient to give one general name to the dark races. They differ very much, although in some broad characteristics they have affinity with one another. I am inclined to use a name to include the three races ; although I am not prepared very strenuously to defend my preference. If we give them a general name, I would propose either *Negrito-Polynesian*, or *Austro-Pacific Races*. For the Brown people I propose the sole use in its widest signification of Baron William von Humboldt's name, *Malayo-Polynesian*. I would like to retain a name which has been already so widely used ; but if there be strong objections to this, the term *Indo-Pacific* may serve for them. This latter name would correspond with Indo-European and indicate the geographical distribution of the people.

I. The Dark, Negrito-Polynesian, or Austro-Pacific people, consist of *three races*. 1. *The Australians*, who may conveniently bear the name of the *Austral Race*. Some are inclined to put the extinct Tasmanians with the Australians ; but it is extremely doubtful whether such a classification would be correct. The Tasmanians seem to have come nearer to the people of Western Polynesia than to the Australians. 2. The second race is that of which the Andaman Islanders may be regarded as the type. The Samangs of the Malacca peninsula, the Aetas and others of the Indian Archipelago belong to this race ; and for them we already have a good name which cannot be bettered, viz. : *Negrito*. 3. The third race is found in Western New Guinea, the Aru Islands, and other places in the Indian Archipelago, and also in Western Polynesia. For these people

there are now two names in use, and the question is, which shall we adopt? *Papuan* has been more or less applied to all of them, and it indicates one of their most striking and most constant characteristics, viz.: their frizzly hair. The other name, *Melanesian*, has been used for that part of the race found in Western Polynesia, but has never been applied to the whole race. I would prefer to see *Papuan* used for all. It appears certain that we ought to have only one name for all who have hitherto been called Papuans and Melanesians, and in choosing between the two I think the former is preferable to the latter.

Some people in the Indian Archipelago have been known as *Alfuros* or *Alfures*. But I have always had a doubt whether these are a distinct race, and have not been inclined to assign them any distinct position. From recent information it is evident that *Alfuro* is used by the Mahomedans of the Indian Archipelago for pagans, whether they are brown or black people. They speak of "some Mahomedans, some Christians, and some *Alfuros*;" neither Mahomedan nor Christian, but pagan. This fact was brought under my notice by my friend Mr. Keane, and it seems to settle the question about using the name as an Ethnic appellation.

II. We come now to the *Brown People*, found over such a vast extent of Oceania. I hope we shall be able to retain William von Humboldt's name, *Malayo-Polynesian*, for this family; which, according to our present knowledge, I think may be classified under five sub-families or races.

In his useful synopsis of "the languages of the East Indies," Mr. Cust uses "Malayan" as a name for the family of languages spoken by all these brown people, with the exception of those in Polynesia. Mr. Cust was confined by the geographical limits he set himself in that work, otherwise, of course, he would have included the languages of the brown Polynesians in that family. But I object to his name "Malayan" for the family, which encourages the idea that all the languages are derivatives from the Malay as at present spoken. That, however, I do not believe. I consider the Malay to be one of the most changed and developed languages of the whole family, occupying a position at the top of the tree instead of at its root.

Perhaps you will allow me for a minute to give you my idea of the affinities of these languages and peoples. I believe the parent stock of the whole family once occupied some part of the Indian Archipelago, or the Malacca Peninsula. The earliest migrating branch which separated itself from the parent stock, I believe was that whose descendants are now found in Eastern Polynesia and New Zealand. These people, occupying isolated positions, have retained, to a considerable extent, the language,

customs, &c., of the common stock. All the accretions they have gained have been from their contact here and there with the lower Papuan race, and possibly now and again from the arrival of a few people in a vessel driven from the Asiatic continent or islands. Any accretions thus gained would be very small indeed. But these people, in their small isolated communities, would doubtless lose some of the knowledge and civilisation which they originally possessed. There are evidences that they have deteriorated.* Hence I should say these Polynesians are somewhat lower now than the parent stock was when their ancestors separated from it, but are comparatively near to it.

At a date considerably later than the first Polynesian migration, another branch broke off from the main stock, and going westward, reached Madagascar. It remains for students of Malagasy to learn at what stage of Malay culture this migration took place. Probably the language will be the best instrument for determining this. From the presence of a few Sanscrit words in the Malagasy, I should think it took place after the Malay was affected by the Sanscrit.

I am unable to express any opinion as to when the people of Formosa were separated from the main stock.

Probably the latest migration was that which went eastward to North-West Polynesia. I imagine that this took place after those remaining in the Indian Archipelago had long been scattered through the various islands, and that these people went from one or more of the Eastern branches.

Now comes the question: are all the brown people at present found in the Indian Archipelago portions of one race? We know some—especially French writers—say, No. I cannot enter here into any arguments on this subject; but will simply say I believe they have all sprung from the same root stock, and that the isolation of some, and the greater contact of others with civilising, and other influences have produced the differences now found in them. Mr. Keane has called my attention to one most interesting fact bearing on this question, viz.: that the people found on the chain of small islands west of Sumatra, and who have been isolated from those on the larger islands, in some respects very closely resemble the Eastern Polynesians; in fact, they appear, to a great extent, to have retained what we may imagine the primitive condition of the whole family to have been at the time of the earliest migration.

For the branch of this family now in the Indian Archipelago, I propose to retain the name *Malayan*. Under this generic term will come the specific names Malay, Javanese, &c.

* See on this point, "Ethnology of Polynesia," "Journ. Anthropol. Inst.", Feb. 1879; pp. 261-74.

For the two Eastern branches of the Malayo-Polynesians, I have to propose entirely new names. That in Eastern Polynesia and New Zealand I wish to call *Sawaióri*. This word is a compound formed from the names of three representative peoples of that race; *Sa* from *Samoa*, *wai* from *Hawaïi* (or I might say from the traditional *Hawaïi* or *Hawaiki*, which they say was the home of their race before their migrations), and *ori* from *Maori*. I know the principle of compounding names in this way has not met with much favour in this country. But Mr. Keane has pointed out to me one precedent. The word *Horsoks*, a collective name for the people of North Tibet, is compounded from *Horpa* and *Sokpa*.

Sawaióri may not sound particularly euphonious to those who hear it for the first time, but I think it will pass muster on this ground when we get accustomed to it.

I propose this name because these people have at present no name by which they, as a whole, are known to themselves, and because we have no good name for them. I know a proposal has already been made before this Institute to give a name to them, and something must be said in this connection on that proposal. In a paper which contains many other statements I should not like to endorse, Mr. Rankin says these people have "one family name by which they call themselves." And he explains that "as the dialects vary, as one group use the *r*, which another cannot pronounce, one the aspirate, another none, so the name of their race varies in different islands, but is always the same root. That name is *Mahori* in most southern groups, *Mahoi* in some, *Maori* in others. The first form *Mahori* would be recognised by the great majority as their own name, as distinctive from any Papuans or other foreigners."

If Mr. Rankin were correct in making that very positive statement, plainly *Mahori* would be the proper name for us to apply to all these people. But such is not the case. The word, as he gives it, does not occur at all in the languages of these people. In the Tahitian it has an aspirate before the final *i* and becomes *maohi*; but nowhere has the second syllable an aspirate. The objection, however, to the word is, that in the languages where it occurs it is simply an *adjective*, which means true, real, and which has thus come to mean indigenous in contradistinction to that which is strange and foreign. In Tahiti, *taata maohi* means men of the soil; but the word may be used with other substantives to indicate native trees, native animals, or anything else which is indigenous. Even in the language of New Zealand the word is an adjective:—*wai maori* is true water: i.e., fresh water, to distinguish it from salt or sea water. In the same way *tungata maori* is a true man—a native. *Maori* as a

substantive is not found in the New Zealand dictionary ; and I doubt whether its use as a substantive for the Maori people is a purely native use of the word at all. In Samoa *tangata maoni* (or rather *tangata fa'amaoni*, which alone would be good Samoan) would mean a true, honest, or correct man and never a native, unless it were used in such a sentence as *O le tangata fa'amaoni o le nu'u*, a true man of the place. From this you will see Mr. Rankin's proposed name has no claim whatever to the place he would give it.

For the people in North-West Polynesia hitherto known as Micronesians I also have a new name to propose, viz.: TÁRAPON. This is from *Tárawa* in the Gilbert group ; and *Ponape* in the Caroline, or *Ebon* in the Marshall Archipelagoes. The *t* and *p* being interchanged, the latter part of the word will represent both the Caroline and the Marshall Islands. Ebon and Ponape are the two islands in those archipelagoes about which we know most, and they may be considered fairly representative. I take the first element of the compound from *Tárawa* rather than any other atoll of the Gilbert Group, for the following reason. When Mr. Horatio Hale prepared his great work on the Ethnography and Philology of the United States Exploring Expedition, he adopted the word *Tárawa* for the Gilbert Island language. This is the name of one atoll only, the natives having no general name for the group. He has given a short grammar and vocabulary of this *Tárawa* language which philologists who have seen his book may remember. I think his name is therefore entitled to consideration ; and in making this wider generalisation I take the first part of the name he adopted.

The people of Madagascar and Formosa of course need no new names. Malagasy and Formosan may be kept for them.

I have not assigned any special place to the Motu and other people of Eastern New Guinea, for the simple reason that their relationship with the other people has not yet been ascertained. There is little doubt but they are more or less mixed. We may, when we know more about them, have to call them sub-Malayan, or sub-Sawaiori ; just as I think it will be convenient to call some of the mixed people in Fiji, the Loyalty Islands, New Hebrides, &c, sub-Papuan, to indicate that they are not pure Papuans.

My general scheme is set forth in the plan on pages 361 and 362.

It may be convenient, in conclusion, to recapitulate the changes proposed in this paper :—

1. To use Polynesia as the only geographic term for all the inter-tropical islands of the Pacific, eastward of the Philippine Islands and New Guinea, and to cease using Melanesia and Micronesia.

2. To employ the names Austral, Negrito, and Papuan for the three dark races.

3. If any general name be employed for these three races, to call them Negrito-Polynesians.

4. Uniformly to use the name Malayo-Polynesian for all the brown people in Madagascar, Formosa, the Indian Archipelago, North-Western and Eastern Polynesia and New Zealand.

5. To call those in the Indian Archipelago Malayan, those in North-West Polynesia Tarapon, and those in Eastern Polynesia and New Zealand Sawaiori.

6. Perhaps to distinguish those people who are considerably mixed by the terms sub-Papuan, sub-Sawaiori, &c., &c.

DISCUSSION.

Mr. A. R. WALLACE was sorry the paper had not been read some months earlier, as it might have somewhat affected the nomenclature he had adopted in a work on the geography of Australasia now passing through the press. He thought Mr. Whitmee's proposed alterations far too large and radical to have much chance of being adopted. Names already in use, and with a definite meaning, should not be changed without very weighty reasons. He thought "Melanesian" a good word, and generally understood. He, like Mr. Keane, objected entirely to the term Malayo-Polynesian as being wrong and misleading from a physical point of view. It implied that the Malays and the brown Polynesians were close allies; whereas they were really very remote allies, and the Malays were certainly much more nearly related to the natives of Burmah or even of China. To use the word Malay at all in connection with the Polynesians was misleading, as it implied a theory which was almost certainly wrong. There would perhaps be no harm in using the term Indo-Pacific, as suggested by Mr. Keane for all the insular races, but otherwise no general term was needed. He thought that the general principle of priority in nomenclature should apply in anthropology as in natural history; and therefore, if any new term was applied to the Polynesians, Mr. Rankin's word "Mahori" should have the preference. It is euphonious, it implies no theory, and on Mr. Whitmee's own admission it was applicable, as meaning "indigenous" among the Polynesians themselves. As regards the black woolly-haired races, Papuan was certainly a good term, because it meant frizzly-haired, but it had come to be somewhat restricted to the natives of New Guinea itself, and its immediately surrounding islands. If used as a general term, it might be modified into Papuanese, which might include all the tribes or races from Flores on the west to Fiji on the east, the old term Melanesian being restricted to the frizzly-haired natives of the Pacific east of New Guinea. Micronesia also was a term generally understood, and very useful as defining the small islands to the north of New Guinea, and east of the Philippines. It was a useful

geographical term, and implied no theory as to the people inhabiting the islands, who were more or less of mixed races. He thought Papuanese (or Melanesian) if adopted as a general term for the Eastern frizzly-haired people as contrasted with the African or Western, should include the Negritos as a matter of convenience, and because Dr Beccari had stated that he had seen some people from the interior of New Guinea, who very closely resembled them. If it should turn out that there were intermediate tribes between Papuans and Negritos, notwithstanding their considerable cranial differences, we should find the convenience of having one term to include the whole, just as the general term Negro includes the whole of the woolly-haired races of Africa, among whom somewhat analogous differences occur.

Professor FLOWER, F.R.S., said that he never entered into any questions bearing upon the revision of existing nomenclatures without thinking of two fundamental principles laid down by two leaders of our branch of science. Professor Owen once wrote that "the sooner a term becomes an arbitrary sign the better."* Professor Huxley tells us that "it is better for science to accept a faulty name which has the merit of existence than to burden it with a faultless newly invented one."† But as knowledge increases, new words must be introduced, and the meaning of old ones must be restricted and defined, and if the subject is approached with caution, judgment, and a due sense of responsibility, as appears to be the case in Mr. Whitmee's communication, science may be advanced by their revisions. As Mr. Whitmee has invited criticisms, he ventured to offer some, although most of the points raised required more careful consideration than could be given to them in one evening. With regard to the term "Inter-Oceanic," it did not seem to him any improvement upon the generally used and well understood "Oceanic." He also would scarcely like to supersede "Micronesia," at all events as a geographical term; for such an objection as that, there were small islands in other parts of the world, to which might be applied a vast number of other names commonly in use; and he was not sure that the people inhabiting this region were a sufficiently distinct race to require a special designation, as they appear rather to be hybrids formed of several other races. For the light brown people of the Central and Eastern Pacific, Mr. Whitmee's "Sawaiori," he had himself been content to use the old word Polynesian, restricting it for the future to this race. For the dark people with frizzly hair, inhabiting mainly the Western Pacific, he preferred the term Melanesian; although much was certainly to be said for the older word Papuan. He doubted whether any general term was required to include the Negritos of the Andaman Islands, and the Papuans and Melanesians; as no definition could be given of these groups, which would exclude the African negroes and even the bushmen. Except the dark colour and woolly hair, there were

* "Trans. Geological Soc.," 1857, p. 55.

† "Critiques and Addresses," p. 153.

scarcely any physical characteristics common to the natives of the Andamanes and the New Hebrides.

Mr. WHITMEE : In reply to the remarks of Mr. Wallace, Mr. Keane and Professor Flower, I may say, I have retained Malayo-Polynesian out of respect for Baron W. v. Humboldt, and because it is in use ; otherwise Indo-Pacific would doubtless be the better term. I am prepared to accept Melanesian, or any other name which may commend itself to ethnologists ; but I must except “Mahori,” which I think I could never accept. The brown Polynesians (Sawaióri) I do not regard as a mixed race ; they are the purest of the whole family. Those in North-West Polynesia (Tárapon) are mixed, quite a hybrid people. The blacks cannot be put under one term if it is to imply any close connection. The Australians are very different from the others. Negrito-Polynesian, if used, would be simply a convenient geographical name for the blacks of this region. But I am not prepared strongly to press the adoption of that name.

The following communication, entitled “Ethnological Notes on the Motu, Koitapu, and Neighbouring Tribes of New Guinea,” was contributed by the Rev. W. G. LAWES.

ETHNOLOGICAL NOTES *on the* MOTU, KOITAPU *and* KOIARI
TRIBES *of* NEW GUINEA. By Rev. W. G. LAWES.

THE following paper is intended to be a sequel to one by Dr. W. Y. Turner on the “Ethnology of the Motu” which was read before this Institute and published in the Journal for May 1878. The information contained in it has been gathered during three years’ residence (from December 1874 to December 1877) at Port Moresby.

I would repeat the caution given by Dr. Turner in his paper in reference to the size of New Guinea and the necessity of specifying with exactness the district about which statements are made and information given. This caution is more important in reference to the people than to the country : the diversities of race and tribe are so numerous. An illustration of this may be found in the fact that twenty-five different languages are certainly spoken on the 300 miles of coast extending from Yule Island to China Straits. Many of these are, of course, dialects, but they differ from each other as much as those spoken on the different islands of Polynesia.

Port Moresby is in lat. $9^{\circ} 30'$ S. and long. $147^{\circ} 10'$ E., it is the centre of the Motu district which extends 18 miles to the east, and 30 miles to the west.

My knowledge of the Motu tribe is the greatest, but as Dr. Turner has treated of it so fully in his paper, I shall simply

supplement his statements by a few respecting the Motu and then proceed to the Koitapu and Koiari tribes.

In reference to the tatooing of the women.

There is but little variation in the pattern and style, but this seems to arise rather from inability to design new, than from any special attachment to the old. They were glad to get new patterns from some of our printed calicoes and other English designs. They attach great importance to the tatooing as a means of enhancing beauty. A woman lighter than usual is esteemed handsome, principally because the tatooing shows up so much better on the lighter skin.

The Kerepunu women at Hood Bay are tatooed, and there is no essential difference in pattern from that of the Motu.

Some of the men are tatooed across the chest and forehead; but in their case it is a decoration of honour. It means that the wearer has shed human blood, or in plain English, that he is a murderer. It is the ambition of every young man to get tatooed. Raids were sometimes made on small villages along the coast for the simple purpose of killing some, that the young men may come back and be tatooed. It was no uncommon thing to hear men quarrelling, and one saying to the other, "Who are you that you should talk? Where are your tatoo marks? Who have you killed that you should speak to me?"

The tatooing is done by marking the pattern on the skin with lamp-black and water, and then puncturing the skin by lightly tapping a thorn on it. The whole of the pattern is gone over in this manner, and but little pain or inflammation seems to result from it.

A system of *taboo*, such as that which prevails in Polynesia is practised by the Motu. The fruit of a tree, for instance, is tabooed by plaiting a cocoanut leaf round the trunk. When a man is taboo, he lives apart from his wife, and his food is cooked for him by his sister. It is worthy of note that a man is taboo after handling a dead body: generally for three days, during which time he does not touch food with his hands. At the end of that time he bathes and the taboo ends. On a variety of occasions and things the taboo system comes in practice.

The belief of the Motu respecting their dead is that the Tirava, or spirit, goes away out to ocean space (Taulu), which seems to be their Hades, and then to Elema, where he feasts on sago, and rejoices in plenty. Elema is the district about Freshwater Bay where the Motu go once a year for sago, and which is to them a paradise of plenty and animal enjoyment. Similarly at Kerepunu (Hood Bay), the spirits of the departed go to the mountain tops where they feast and chew betel-nut *ad libitum*. In each

case it is the district whence their choicest food in the greatest quantity comes.

A woman died at Port Moresby just before I left. When the body was laid in the grave, the husband threw himself on it and quietly sobbed out his grief. After a while, his friends attempted to lift him off, but he said, "Stop a minute." He then put his mouth to her ear, whispered for a minute or two, and then allowed them to remove him. He asked her not to be angry with them because they could not give her a share of their feasts, and when they should go inland hunting, or to sea fishing, that she would watch and protect them.

The legends of a people are often helpful in tracing their origin.

The Motu have a legend of the origin of fire amongst them which is as follows :—

Our ancestors used to eat their food raw or cooked in the sun. One day they saw smoke at Taulu (*Tuulu*—ocean space). The dog, the snake, the bandicoot, a bird and kangaroo all looked and exclaimed, "Smoke at Taulu," "Smoke at Taulu," "The Tauluites have fire. Who will go and fetch us some?" The snake went, but the sea was rough and he soon came back. The bandicoot tried and he returned. The bird started but the wind was strong and he could not fly, so he came back. Then the kangaroo went, but he had to return. Then the dog said, "I'll go and fetch the fire." He swam until he reached an island. He landed, saw a fire and women cooking; they said, "Here's a strange dog, kill him, kill him!" But the dog seized a burning firebrand by the unburnt end, and jumped into the sea. He swam back, the people watching him from the shore as he came nearer to the land with the smoking firebrand. He landed, and the women rejoiced to have fire, and women came from other villages to buy it of them. Soon after the dog landed, the other animals were jealous and abused him. He ran after the snake and he went into the earth, in a hole. The bandicoot did the same. The kangaroo went to the mountains, and there has been enmity ever since between the dog and the other animals.

I now pass from the Motu to the Koitapu. The Koitapu are now for the most part to be found living at one end of the Motu villages, although preserving their distinctness and separateness. They are also to be found in little groups of a few houses, a little way inland, or on a hill overlooking the sea, all through the Motu district.

In *physique*, there is but little difference between the Koitapu and Motu. The typical Koitapu man is slightly darker in colour than the Motu, though by no means so dark as the coast tribes

to the west of Yule Island. The hair is frizzly, not woolly, the forehead is perhaps more receding than in the Motu.

The principal differences between the Motu and Koitapu, are the following:—

Language.—This is essentially different from the Motu and all the coast dialects. It is closely allied to the language spoken by the Koiari or mountain tribes, but differs from Malayan or Malayo-Polynesian. In a vocabulary of 250 words which I collected, there are only 12 words which have any affinity for coastal dialects or Malayo-Polynesian, and these are probably borrowed from Motu, or *vice versa*.

The word for “spirit” among the Koitapu is the Polynesian “Tua.”

Food and Cooking.—The second marked difference is in their food and mode of cooking. Their bill of fare is more extensive than that of their neighbours. They add to it, birds, snakes, lizards, dogs, cuscus, echidna, and some kinds of ants. The Motu natives are careful and nice in their diet. The Koitapu will eat anything they can get their teeth through. The Koitapu mode of cooking is the same as that prevalent in Polynesia, viz.: with hot stones, and also by roasting. A light framework of sticks is erected, the meat is placed on, and a slow fire kept up beneath until the meat is dried rather than roasted. This plan is generally adopted when they are out hunting and wish to preserve large quantities of meat to take home. The Motu mode of cooking by boiling in earthenware vessels is largely practised; but this is a borrowed custom.

Ornaments.—In these they are distinct from Motu and coast tribes.

The breast-plate or charm is spoken of as “kepore” by Dr. Turner, and mentioned among Motu ornaments. It belongs to the Koitapu, and though worn sometimes, and prized by the Motu, is not of Motu origin. This ornament seems to be worn by aborigines of very different parts of New Guinea. It is described at Humbolt Bay, on the north coast, by the “Challenger,” and is also found at Orangerie Bay on the south-east coast. It is a charm as well as an ornament, and when held between the teeth, is supposed to strike terror into their adversaries, and to give the wearer victory over them.

The lupu or feather head-dress is also a Koitapu ornament, and seems to be very widely distributed over New Guinea.

The nose is pierced as in the Motu, but the nose stick is less commonly worn.

The long mop of hair, the young men’s pride, is often confined in a piece of thin cloth made from the bark of the paper

mulberry, and sometimes in a hair net, made expressly for the purpose.

Weapons and Manufactures.—The weapons used by the Koitapu are the stone club and spears. The bow and arrow is not used by them, but is confined to the coast tribes. The spears are made of one piece of wood, and are often very carefully carved. All the cutting tools are of stone and shell.

The Koitapu make mats quite different to those on the coast and resembling the common Chinese matting. To them also is assigned the knowledge of making the netted bag, now common on the coast. This is made also by some of the tribes in Australia. It is the only case in which I have seen an Australian article in New Guinea.

The Koitapu do not know the art of making pottery, except in a very few cases where it has been learnt from the Motu.

The Koitapu are hunters, not fishermen. They possess no canoes and have nothing to do with the sea; but they excel in hunting the kangaroo and wild pig, and are superior to the Motu in the chase. They barter large quantities of kangaroo meat to them for fish, &c.

Without presuming to express an opinion on the difficult question of the races inhabiting South-East New Guinea, I have been led to believe that the Koitapu and Koiari are the aborigines of this part, while the coast tribes are settlers, and probably of Malayan origin. The coast tribes, while the conquerors of the others and their superiors, have yet a superstitious fear of the Koitapu and Koiari. Any calamity befalling them is attributed to the power of these inland tribes. Many of the Koitapu are shrewd enough to take advantage of this, and by assuming supernatural power, extort large presents from the Motu.

In 1876 an expedition left Port Moresby and neighbouring coast villages, to get sago from the west. As they were returning, the sea became rough and they were obliged to throw a good deal overboard to save their frail canoes from total wreck. A tribe from Hood Point had been waiting for a share of the sago, and were angry at the small quantity; but instead of venting their anger on the tribe who had been unfortunate, they laid in wait outside the Koitapu village and killed the first man who passed. This was done, they said, to revenge their bewitching the canoes and making them unfortunate.

They are supposed to be able to prevent rain from falling. Last year was one of prolonged drought. A Koitapu village was said to have been the cause, and a party of Motu ultimately went to wreak their vengeance on the poor fellows living in that village. Some eight or ten were killed, and as the drought

had long continued, rain soon followed this murder and confirmed the natives in their superstitious belief. Disease among the Motu is always attributed to evil spirits. No man is thought to die of disease, but is killed by Vata, the prince of evil spirits. The Koitapu are supposed to possess power over these. The first thing a Motu man does when anyone belonging to him is dangerously ill is to go to a man, or oftener a woman, of Koitapu, with large presents that they may loose the power of the evil spirit over the sick man. In some cases the woman comes and sucks the seat of pain in the patient and pretends to extract from it little pellets of fibre or stones, &c. The custom is precisely the same as that described by Sir J. Lubbock in "Origin of Civilisation," pp. 27, 28.

The Motu are afraid to go out at night for fear of ghosts. The Koitapu have no such fear, but often travel inland at night. The coast tribes fear the gods of the land, and in case of calamity appeal to the owners of the soil to propitiate the gods, or wreak upon them their vengeance in revenge for what they have suffered.

There are many indications that the Koitapu are now but a small remnant of what was once a numerous and powerful tribe. The natives of both races say such is the case. The many deserted sites of villages with skulls and bones here and there support this statement. Between the coast tribes who have driven them inland, and the Koiari or mountain men, their ranks have been decimated. They now live for the most part alongside the Motu villages, but always distinct from them. Intermarriages, however, take place between them. During the hunting season it is quite common for them to camp inland for many weeks at a time, coming down to the coast occasionally to visit their houses and barter their kangaroo meat.

Closely allied to the Koitapu are the mountain tribes called Koiari.

These inhabit the mountains at the back of the Motu and Koitapu district, and consist of a number of scattered tribes. They are inferior in *physique* to the Motu, and generally to the Koitapu, but are more numerous than either. They are generally small in stature, dark in colour, and dirty in their persons and habits. Their hands and feet are remarkably small. They are much more hairy than the Motu. Many of the men have beard and whiskers. They seem, however, to present great differences: some seem to resemble some of the Australian tribes; a noticeable feature in others is the hooked nose spoken of by Mr. Wallace as characteristic of the true Papuan; others have quite a Chinese appearance; while others might lead one to fancy that New Guinea was the refuge of the ten lost tribes.

The villages of Koiari are built on the ridge of a hill, and generally command a view of all the approaches to it. The houses are built on piles, raised 5 or 6 feet above the ground, while in almost every village is one house high up in a tree. One deserted village, named Moumile, which I visited, consisted largely of tree-houses. One tree contained four houses at different heights, the highest being quite 60 feet from the ground. Ladders of rattan cane and vines led up to these.

The Koiari, like the Koitapu, are great hunters, and descend often to the plains to hunt the kangaroo and pig. Their language is very similar to the Koitapu, the difference being only dialectal.

They cook their food the same as the Koitapu. They fetch their water in bamboos. They cultivate the soil and fence in the gardens, but with split wood placed longitudinally, instead of upright, as the Motu. Their gardens in the ravines and gorges of the hills are very fruitful. Tobacco is cultivated, and forms an article of barter with the coast tribes. They have a custom in smoking similar to that of drinking healths. They sit round the fire, and having filled their bamboo pipe, shout out a name before they take their whiff. In my case I was their guest, and had given them some foreign tobacco, and they wished to honour me. They shouted as they took the pipe "Misi Lao kuku e!" (Mr. Lawes tobacco, oh!) and "Misi Lao biaki" (Mr. Lawes' our friend). Far into the night were to be heard the shouts of "Misi Lao kuku e."

The women of the Koiari seem to be more degraded than among the Motu and Koitapu, and polygamy is more common. We were shown just outside a Koiari village the newly-made grave of a wife of the chief. He had two wives; this one displeased him, and he immediately speared her to death. I was told that this was no uncommon case.

The treatment of the dead differs from that of both Koitapu and Motu. When a chief or any one of importance dies, the body is not buried, but laid out in the house. In the village of Kininimu, which I visited, several such proclaimed themselves to the least sensitive nose as we walked through the village. A chief whom I knew, and visited 18 months before, had died, and was in the house next our tent. After sunset, the young girls of the village sat round, and sang extempore songs in a low plaintive key which sounded among the hills pathetic and beautiful. We were told that this was done every evening. After a few weeks the body is placed on a platform of sticks up a tree in an exposed position. A fire is lit underneath and between the smoke of that and the rays of the sun, the body soon becomes perfectly dry. We saw one or two with the knees tied up as when sitting, while the parchment-like skin had split on the skull, showing one half white

and the other brown. When they have become thoroughly dry and fall to pieces, the bones are wrapped up in a bundle and hung in the house where the man lived, or in a tree close by. Two skulls from these bundles may be seen in Dr. Rolleston's collections at Oxford. The mode of salutation with the Koiari is peculiar. When I arrived at one of their villages, a chief, whom I knew, put one of his arms round my neck, and began fumbling about at my throat. I wondered what he wanted, but presently found that he was feeling for my chin. They salute their friends by chucking them under the chin.

The Koiari, in common with all the tribes in this part of New Guinea, are chewers of betel-nut. It grows on their mountains plentifully, and is much coveted by the coast tribes, with whom it is an article of barter for cocoa-nuts which do not grow in the interior.

These mountain men are very anxious to get salt. They never go down to the coast without taking back bamboos full of sea-water, and sometimes staying long enough to boil it down and take it back in a solid form. One of the most acceptable presents I could take to these inland villages was a little salt. They would eat it alone or chew it with ginger or their betel-nut.

In concluding this paper, I may state that I had intended comprising in it an account of another tribe, the Kerepunu, at Hood Point and Bay, but the length of this led me to reserve it. It is at the disposal of the Institute, if at some future time it would be of use or interest.

In connection with our mission on New Guinea, we have now a larger number of stations occupied along the coast, and for myself and colleagues I may express our willingness and pleasure to contribute in any way we can to the interests of science or commerce. A large number of Polynesians are associated with us in our work, and it is worth noting that the pioneers of civilization and Christianity on New Guinea are the children of savages and cannibals in many respects worse than those in New Guinea to-day.

DISCUSSION.

Professor FLOWER said that he was sure that all present would join in thanking Mr. Lawes for his interesting communication, and also for the promise of future additions to our scientific knowledge from himself and other members of the mission to which he belonged. He hoped that besides the valuable contributions they were making to our information about the manners, social condition, and language of the interesting people they worked among, they would also endeavour to obtain more evidence of their physical



SKELETON FOUND AT CISSBURY, APRIL 1878.
Not measured

characters, especially as shown by their skulls. The single specimen exhibited was not sufficient to draw any general conclusions from with safety, but as far as it went, it was of importance, as it showed (as might be expected from the evidence), somewhat mixed characters, though on the whole, most inclining to the Melanesian type, so much so that he would have no hesitation in saying (even before he had seen the photographs exhibited) that the individual to whom it belonged had hair of a frizzly, if not quite frizzly character.

Mr. A. R. WALLACE said, that he had seen much of the Papuans of the north-west of New Guinea, and had read almost all that had been written about the natives of the south-east part of the island, and he considered it proved that the latter were a mixed race; intrusions of brown Polynesians, and perhaps of the natives of some of the Melanesian islands, having occurred in successive waves, probably from a remote antiquity, thus producing the various mixtures of type, and relics of Polynesian and other customs. There was also said to be an undoubted Polynesian element in the language of the Motu and other coast tribes. With regard to the Papuans themselves, he believed they formed a very well marked and distinct, though variable race, occupying the greater part of New Guinea; and that the failure of Professor Flower in his search after a Papuan type of skull arose from paucity of materials.

Captain HAROLD DILLON, F.S.A., exhibited some flint implements from Canada and the United States of America.

NOTES on SKELETON found at CISSBURY, April, 1878.

By GEORGE ROLLESTON, M.D., F.R.S., V.P.A.I., &c.

AT page 431 of Vol. vii of the "Journal of the Anthropological Institute," May, 1878, will be found a short account by Mr. J. Park Harrison of the discovery of a second skeleton in the Cissbury Flint-works. This discovery was made at the end of March of that year, and having myself been engaged in the investigations carried on at Cissbury in 1875 (See "Journal Anthropological Institute," Vol. v, Jan., 1876, General Lane Fox, "Excavations in Cissbury Camp," pp. 357 to 390, and Vol. vi, 1876, pp. 20 to 36), I was sufficiently interested in Mr. Harrison's discovery to visit the scene of his operations on April 5, 1878.

On arriving I found that the skeleton had been carefully removed and committed to the guardianship of Dr. C. Kelly, the Officer of Health for the District, and now Professor of Medical Jurisprudence at King's College. To him, as to Mr. Harrison, my best thanks are due, for the information

which they most kindly supplied me with as to the details of the "find;" and to Dr. Kelly's professional knowledge and supervision the almost perfect recovery of the bones is to be ascribed.

The view which, partly from the data furnished to me by these gentlemen, partly from my own observations on the spot, I have come to entertain as to the history of this interment may be briefly stated thus:—One of the "cave-pits" or shafts of the Cissbury flint mines* having been disused by the flint workers for some time, had got filled up to about one-half of its depth, just as several of these pits have got filled up since *our* opening of them, by the scaling off and tumbling down of the more loosely compacted strata of the chalk forming its wall on to such rubble as its excavators had left on its bottom to save trouble. When this process had been arrested, owing to the less firmly compacted and coherent parts of the walls having been all removed under the influence of frost and rain, sufficiently long to allow of the formation of a layer half mortar half red mud at the bottom of the downward pointing conical depression which the desquamation of these *débris* had formed, we may, with the aid of the annexed heliotype from a photograph taken by Messrs. Russell, of Worthing, under the superintendence of Mr. Harrison and Dr. Kelly, reproduce in imagination the flint workers in the act of depositing on the smooth surface thus formed the dead body which the skeleton represents. The corpse was laid upon its right side, with its face to the East, with its knees within less than half a foot from its chin, with its lower legs bent back upon the upper, and with its forearms similarly at right angles to the long axis of its trunk; in one word, that is, in the "contracted" position. In front of its knees a large flint hatchet of oval contour† was placed, and the body was then surrounded by blocks of chalk and some large unworked flints ranged in greatest prominence round the back aspect of the trunk, head, and limbs, but forming also what is in the heliotype, a less conspicuously marked fence in front of the dead body. Some eight shells of

* For a ground plan showing the particular shaft in its relation to the other shafts in its immediate neighbourhood, see Mr. Park Harrison's paper in "Journ. Anthropol. Inst.," Vol. vi, Pl. X, p. 413. May, 1878, where it is numbered Shaft vi.

For a figure of one of these shafts as they appear when cleared out of the rubble which till recently filled them up, and as it may be supposed to have appeared, if we add by imagination a quantity of rubble to the bottom of it, when the flint workers had finished it, see Mr. Park Harrison's paper, *Ibid.*, vi, Pl. XXIV, p. 432, May, 1877.

† The implement is shown in the annexed heliotype at c, and is the one spoken of by Mr. Park Harrison, *l.c.*, p. 431, as lying "near the head in front." There was only an interval of seven inches between the patellæ and the skull. The heliotype shows that some few worked flints were found, as was also reported to me by Dr. Kelly, around and on a level with the skeleton

Helix nemoralis and a fire-marked pebble appear to have been placed with the body, and after this had been done, the flint workers must have piled chalk rubble over their deceased comrade to a height of about a couple of feet, and having thrown or put in some half-dozen flint implements a little above and behind the spot occupied by the shoulders of the corpse and just outside the line occupied by the line of chalk blocks, they must, so far as the relics left to our inspection can show us, be supposed to have considered the interment completed.

Subsequently to the interment, the history of the filling up of the pit must have been very much the same as has been the history of the filling up of the pits excavated and observed during the last half-dozen years by ourselves. In a section of such of the contents or filling in of the pit as Mr. Harrison had left in the position which they had assumed in falling into it, two other red streaks, besides the one on which the skeleton had been placed, were visible. The first of these describes a somewhat conical contour with the apex of the cone reaching downwards to the level of the couple of feet of chalk which we suppose to have been heaped over the body as deposited, and with the base prolonged upwards to a place more than half-way from its apex to the surface of the ground. And we must suppose this red streak to have been formed simply by the deposition of the lowly soluble alum- and iron- silicates, the rain carrying away with it to lower levels the more soluble calcareous element of the chalk it fell upon. This red streak is, to the eye, just like the red layer found capping the natural surface of the Downs, and the two layers may therefore, with considerable probability, be considered to have been both formed in the same way.

The former, however, of the two layers contained traces of lime and magnesia, and may have been deposited in a comparatively short time, as the square surface of chalk made up firstly by the walls of the pit, and secondly by the heaps of excavated rubble which no doubt surrounded its mouth, must have been comparatively great. Within the boundary, constituted by this red streak, were contained alternately strata of fine chalk and of medium sized rubble, more or less interpenetrated and agglutinated by still finer water-deposited chalk.

These contents of this upper crateriform cavity we may reasonably suppose to have fallen into it under the influences of rain and frost acting upon the exposed chalk surfaces just mentioned. Above them a second red streak was to be seen at about the level of natural surface stretching more or less horizontally across the section. It appears to have been continuous at the walls with the other downward dipping red streak, very

much as the upper or anterior of the two conical sacs forming the surface net used for catching sea animals is continuous with the lower.

The more thorough washing which its longer exposure had given this uppermost streak of red mud had washed out of it all the traces of lime and magnesia which were found in the lower streak when examined chemically in Oxford.

Two more layers were visible above this red streak; the lower of them was made up of chalk blocks, forming a structure of from $1\frac{1}{2}$ feet to 2 feet thickness. These blocks may obviously be supposed to have been some of the blocks which had been taken out of the pit whilst it was being excavated, and which after a long sojourn outside of it—long enough to allow of the formation of this second red streak—had finally, either by man's aid or that of some other motor force, been returned "into the hole of the pit whence they were digged." The upper of the two layers was made up of the black mould from vegetable *débris* which forms the bottom of so many of the cup-shaped depressions so characteristic of Cissbury.

The 14 or 15 feet which intervened between the red streak, about 5 feet long, upon which the body had been laid, and the natural chalk at the bottom of the pit were occupied with large blocks of chalk and smaller *débris*, which being of much the same character as the contents of the horizontal galleries in their neighbourhood may reasonably be supposed to have been left at the bottom of the pit to save the miners the trouble of carrying them up. They were much agglutinated by fine infiltrated chalk which had been deposited as the downward passing rain lost more and more of its carbonic acid.

It was in this deeper portion of the shaft that the following animal remains were found; a horn of goat (*Capra hircus*) which came from a level 23 feet from the surface; some horns of red deer (*Cervus elaphus*) which came from a level 20 feet from the surface; and some others from the galleries which branched off from the bottom of the pit some 7 feet lower. In one of those galleries an ox's scapula was found, April 8th.*

Stone implements were found in considerable abundance in this portion as in the rest of the filling up of the shaft. Some of them were also of considerable beauty, as notably one found 6 feet from the bottom of the cave, April 6th. It is worthy of notice that four lumps of iron pyrites were found near the mouth of one of the galleries, and about 4 feet to 5 feet from the bottom of the pit; and near them were found from 300 to 400 flint chips in a heap. In this collection we have an indication as to the place where the flints were worked

* For use of scapula of ox as a shovel, see Gen. Lane Fox, *l.c.*, p. 383.

up into weapons; and the marks of fire which have been supposed to have been found there may indicate that the presence of a fire was found desirable and secured by the workmen of those early days. I do not, however lay much weight upon this latter suggestion, chiefly because I think that the marks of fire would have been more obvious and less ambiguous* than they are if the lighting of a fire had been a very common practice with the flint-miners.

Part of the lower jaw of an ox (*Bos longifrons*) has come into my hands from those of Mr. Park Harrison, with the note "16 feet," *i.e.*, that of the level at which it lay in the pit, upon it; and a fragment of the femur of a tame pig (*Sus scrofa*, var. *domestica*), appears, though the labelling is a little indistinct, to have come from a higher level, *viz.*: that of 11 feet.

The further history of this shaft has been obtained from the postscript to Mr. Park Harrison's paper, "Journ. Anthrop. Instit.," vii, May 4th, 1878, p. 424 and pp. 431-433, and from additional information furnished to me by that gentleman and by Dr. Kelly. In following up the excavation of Shaft vi (shown on the plan, Pl. X, *l.c.*), the workmen came first at a little distance above the level of the skeleton, and, as was afterwards made out, over its left shoulder, upon six flint implements of about 4 or 5 inches long, and subsequently upon the cist round the skeleton, and then upon the skeleton itself. This skeleton is that of a man between twenty-five and thirty, who had suffered from hemiplegia when a child, but had sufficiently recovered to take an efficient share as a flint-miner in the labours of the surroundings in which his remains were found. His had been a formal, that of the female from Cissbury, already described by me ("Journ. Anthrop. Inst.," vi, 1876), an accidental interment; but the bones of the two skeletons and the relics found in company with them, show that their owners lived probably about the same time, were themselves of about the same age, though not of the same sex, and followed the same avocations.

I spoke (*l.c.* p. 32) of the skeleton previously found in one of the Cissbury flint-mine-shafts as having belonged to a "woman of about twenty-five years of age, of low stature, 4 feet 9 inches," and very much the same words might be used for describing the male skeleton now before me. Some little doubt might have arisen as to the question of the sex of this skeleton in the mind of anybody who might have chanced to put his hand upon the

* Some of the black deposits which in other shafts had been supposed to have been due to fire, turned out, when examined microscopically, to be of a vegetable nature, and to be, possibly enough, identical with the *Protococcus lugubris* of Prof. Leidy, of Philadelphia.

long bones of the left arm on first seeing the skeleton. For these bones are disproportionately short as compared with ordinary male humeri, radii, and ulnæ, as their measurements will show; and it is only when they are compared with the corresponding bones of the other side of the body, and found to be much shorter than those of ordinary male bones, that we see that this shortness has a pathological, not a sexual significance, and is to be explained as having been caused by infantile paralysis which was partially recovered from. There is, however—when we examine the other bones of the skeleton, happily through Dr. Kelly's help, nearly all available for this purpose—no doubt as to the sex of the owner of this skeleton. As regards the limb bones even of the left arm, their markings for the insertions of muscles are much better defined, and their absolute dimensions are larger than those of the skeleton already described, and the same applies, *mutatis mutandis*, to all the other bones. The orbital ridges, the mastoid processes, the parieto-occipital and the frontal slopes in the cranium, the lower jaw and the pelvis, all alike possess the characters which are held to indicate the male sex.

I spoke of the age of the Cissbury female as having been "about twenty-five years," and I think, as this phrase may be taken to cover the quinquennial period from twenty-five to thirty, it may be considered to have been scientifically as well as otherwise justifiable. It is difficult to pronounce definitely as to whether the male skeleton now before us belonged or did not belong to an older individual than the female already described. In both, the epiphyses of the movable vertebræ have coalesced with the centra, those of the ossa innominata and those of the ribs and clavicles with the rest of those bones, whilst in neither have the first and second sacral vertebræ coalesced, which they usually do about the thirtieth year. On the other hand, the lines of junction of these epiphyses are a little more evident in the male than the female skeleton, and the teeth are not quite so much worn down, so that the male may be supposed to have belonged to a somewhat younger individual. In the male skeleton, again, the manubrium sterni is not ankylosed to the body; but this ankylosis, as visible in the female skeleton, must be considered an abnormality, explicable, possibly, by some peculiarity of diet, as it does not usually supervene till advanced life.

That the owners of the two skeletons under comparison were really workers in the flint mines in which they were found, is rendered probable by the markings of their long bones, of which mention has already been made in the description of the female skeleton (*l.c.* p. 35). The insertion of the deltoid, a muscle greatly employed in climbing, is very prominent in both humeri

of the male skeleton, but especially in the right; the insertions of the greater pectoral and of the latissimus dorsi, which take such a large share in pulling the body after the upwardly extended and grasping arms takes, as in the gorilla, the shape of long, roughly undulated, depressions, the anterior border of the bones, from the upper end of the insertion of the pectoral down to that of the deltoid, describes a curve convex forward to an extent which I have not noted in other human humeri, but which is very similar to that described by the anterior border of the platycnemic tibiæ. The musculo-spiral grooves are poorly marked; but the flat lower part of the posterior surface shows much more signs of the implantation of muscular fibres than is usual even in much more powerful humeri. All the four ulnæ of the two skeletons now before us resemble each other, in having the lesser sigmoid notch for the cylindrical head of the radius shallow and poorly defined, whilst the lower edge of the bone describes a much more marked carinated curve, extending over a distance of $2\frac{1}{2}$ inches by $3\frac{1}{2}$ inches, from the level of that notch forward, than is usual in human ulnæ. These peculiarities are, according to M. Broca, noticeable in certain anthropoid apes (*see* his "*Mémoires*," tom. ii, p. 181); but like the somewhat similar tibial platycnemy, they are more pronounced in the human than the simian bones.

Setting aside the sexual disparity, which is so often observable in an exaggerated degree in the limb bones of uncivilised races (*see* "*British Barrows*," p. 659, *ibique citata*), the lower limb bones are, like the upper, curiously similar in the two skeletons, and may have their similarity similarly explained by reference to the climbing which must have formed a considerable part of the labour of the flint workers. The femora in both have the same third-trochanter-like facets for the insertion of the gluteus maximus; in both the right femur has its linea aspera much more prominent than has the left, though the bones of the two opposite sides are in both of the same length; in both alike is the bone flattened or flanged out in the region of the insertion of the gluteus maximus. In both alike the tibiæ are platycnemic; though by the much greater development in the male tibiæ of the oblique "soleal" or "popliteal" line, and its prolongation on to the internal aspect of the bone which thus gives insertion or origin to more or less of three muscles, the soleus, the popliteus, and the flexor communis digitorum which do not encroach upon it in normal tibiæ, this platycnemy is made much more striking. The platycnemy, it may be remarked, even of the gorilla, *Troglodylis gorilla*, never proceeds so far as this; though the tibialis posticus takes origin from the outer, the flexor takes origin from the posterior, not from the internal aspect of the tibia. As

regards the pathological peculiarities of the male skeleton, it is observable from the annexed measurements, that the femora have not suffered at all from the right hemiplegia, which we may suppose to have been the cause of the diminution of size of the following left side bones; the left tibia and fibula being $\frac{3}{10}$ -inch less in length, measured from astragalar articulating surface in contact with fibula than the right; and the left humerus $\frac{5}{16}$ -inch, the left radius $\frac{8}{16}$ -inch shorter than the right. With the exception of the shortening, the left limbs do not appear to be inferior in development to the right, in any degree exceeding that which is ordinarily observable in individuals who are, as savage races usually, and civilized very generally, right-handed. The difference which exists between the extent to which this shortening has affected the lower and upper limbs respectively, is an instructive commentary on the following generalisations which Sir Thomas Watson has based upon his experience and studies ("Principles of Medicine," 5th edition, 1871, p. 469): "Supposing the patient to recover wholly or partially from the paralysis, it is the leg, in nine cases out of ten, aye, and in a much larger proportion than that, which recovers first and fastest; sooner and quicker than the *arm*, I mean. And another fact, quite analogous with this, is that when one of the extremities alone is affected with paralysis it is, in nineteen cases out of twenty, the arm that is so affected. In general hemiplegia from cerebral lesion, the palsy of the leg is commonly less complete, and is sooner recovered from than the palsy of the arm."

An abnormal depression, $\frac{1}{10}$ -inch long, of the shape of a segment of the lateral sinus in the cranium, exists immediately internally to the rough oblique line corresponding with part of the upper and outer limit of the origin of the solens for the posterior surface of the fibula of the left side. This may possibly have been produced by the malnutrition caused by the temporary hemiplegia. But no other lesions of this kind, if such it be, have presented themselves to me elsewhere in this skeleton.

The cranium of the male skeleton contrasts with the female, already described, *l.c.*, in the following particulars:—

When placed on a horizontal plane, and viewed in the *norma lateralis*, without the lower jaw, the skull rests on the occipital condyles and the first molar and the teeth anterior to it, whilst the female skull, when similarly placed, rests on the *conspicua cerebelli* and the first and second molars, showing thus at once a greater cranial curvature, which is a sign of elevation, and a greater convexity downwards of the upper alveolar line, which is rather a sign of the reverse. The male skull is more orthognathous than the female, whilst the slope of the forehead is

more oblique, as is usual in male skulls. The same applies to the obliquity in the parieto-occipital region. The frontal and parietal regions are, as the measurements of their absolute widths show, less well filled out and globose than those of the female skeleton;* the muscular impressions show the large development to be expected in a male subject. The ear is seen, as the low antero-posterior index (48) indicates, to be placed far forward in the skull. The origin of the temporal muscle from the frontal, and of the masseter from the malar bone are marked by rugged lines; there is a large foramen emissarium in each temporal bone posteriorly to the digastric fossa, in compensation, as it were, for the existence of but a single small one in the place of the normally present pair in the parietal region. Viewed from behind, the parietal tubera are so faintly marked as to mask somewhat the pentagonal contour which the falling away of the parietals from the middle line of the skull on either side, together with the comparative flatness of the temporal regions, would otherwise give. Viewed in the *norma verticalis*, the skull is seen to be phœnozygous; to have the denticulations of the sagittal suture somewhat coarse where present, and to have the fused halves of the frontals sloping away from the middle line. When the skull is viewed from the front, the lowness of the orbital, and the height of the nasal indices are very obvious; the end interzygomatic diameter forms the base of a triangle with its apex at the middle line of the frontal; but inferiorly, the flanging out of the lower jaw at its angles diminishes the relative superiority of this transverse measurement. The malar portion of the orbit has its edges everted. The supra-orbital portion is strongly developed, and bridges over the supra-orbital foramen. The supra-ciliary ridges are distinct from the supra-orbital, and meet across the middle line. The frontal sinuses are far from being co-extensive with them.

The lower jaw of this skull contrasts in very many important particulars with the lower jaw of the other skull from Cissbury (already described in this Journal, *l.c.*, p. 34). The body of the bone, instead of having its symphysis separated by a wide interval from a horizontal plane upon which itself rests, has an all but perfectly horizontal boundary line inferiorly, upon which would rest in its entire length but for a small downward growth in the region of the symphysis, and a slight rounding off of its angle, the general contour of which is quadrangular; when thus resting on a horizontal plane, it has its coronoid process projecting considerably above the level of the articular surface of the condyle, and when placed in its normal relation with the skull it has this

* The minimum frontal width of the female Cissbury is given (*l.c.*, p. 36) erroneously as 3.1; it should be 3.9; it is in this male skull 3.7.

same process prolonged a considerable way into the zygomatic fossa; a line drawn along the lower margin of the body of the bone makes an angle of but 103° with one drawn along the posterior aspect of its ascending ramus as opposed to the angle of 133° made by the same lines in the other lower jaw from Cissbury; and the teeth are less worn and of smaller size, and the body of the jaw less tumid, though the age was about the same and the sex male as opposed to female. If the regions of the symphysis of the lower jaws differ very much when looked at from the front, they differ even more when looked at from behind. The posterior aspect of the symphysis of the lower jaw can be naturally divided into two segments, one anterior, the other posterior to the tubercles for the geniohyoglossi and the vascular foramen just in front of them. If we place the point of one arm of a pair of compasses in this pretty constant foramen, and take with the other, first, the distance to the alveolar, and secondly, the distance to the mental edge of the symphysis, we shall very rarely fail in the lower races of mankind to find the former of these distances much exceed the latter; and it is certainly only in the lower jaws of the higher races that we find the opposite proportion to prevail. So that if it were not wearisome to add to the list of indices, an antero-posterior index might be established for comparing the relative proportions of the two segments of the usually curved line described by the posterior surface of the symphysis.

The length from the foramen specified to the alveolar edge of the symphysis is in the female jaw 1.1 inch as against .85 inch in the male, whilst the distance from the same foramen to the mental border of the symphysis is in the female jaw .6 inch as against .7 inch in the male.

The following general conclusions appear to be deducible from the foregoing descriptions and comparison of the two Cissbury skeletons:—

Firstly, that from the osteological peculiarities either of the cranium or of the lower jaw, or of the trunk and limbs, or of the skeleton as a whole, arguments of considerable cogency may be drawn for or against the "priscan" date of a human skeleton, independently of the arguments to be drawn from its archaeological surroundings.

Secondly, that in skeletons proved to be priscan by both the above lines of argumentation, points of difference will still be found to exist, independent on the one hand of points of sexual difference, and in spite, on the other, of any tendencies to uniformity, which the supposed uniformity of priscan life may be thought likely to produce.

MEASUREMENTS OF MALE SKELETON FROM CISSBURY, APRIL, 1878.

MEASUREMENTS OF SKULL, FACE, AND LOWER JAW.			MEASUREMENTS OF TRUNK AND LIMB- BONES.		
		inches.			inches.
Extreme length .. ..	..	7.3	Length of right femur ..	..	15.7
Fronto-inial length .. ..	..	7.25	———— left „ ..	..	15.7
Extreme breadth .. ..	..	5.2	———— right tibia ..	..	12.2
Upright height .. ..	..	5.7	———— left „ ..	..	11.9
Absolute height .. ..	..	5.6	———— right fibula ..	..	12.4
Circumference .. ..	..	20.5	———— left „ ..	..	12.1
Basiscranial axis approximately,	4.0		———— right humerus ..	..	12.8
Cubic capacity not taken			———— left „ ..	..	11.5
Minimum frontal width ..	..	3.7	———— right radius ..	..	8.9
Maximum frontal width ..	..	4.5	———— left „ ..	..	8.1
„ occipital width ..	..	4.5	Right clavicle .. ..	..	5.1
Frontal arc .. ..	..	5.	Left „ .. ..	..	5.2
Parietal arc .. ..	..	5.1	Distance from upper limit of		
Occipital arc .. ..	..	4.6	glenoid fossa to posterior in-		
Basiosubnasal line approximately	3.7		ferior angle of right scapula†	6.6	
Basio-alveolar line approximately	3.7		Distance between the widest		
Length of face .. ..	..	2.3	apart points of ilia ..	..	10.0
Breadth of face .. ..	..	4.9	Distance between front of sym-		
Height of orbit .. ..	..	1.3	physis pubis and the sacral		
Width of orbit .. ..	..	1.6	spines .. ..	..	6.3
Length of nose .. ..	..	1.85	Angle at symphysis .. ..	..	35°.
Width of nose .. ..	..	1.0	Antero-posterior diameter of true		
Depth of lower jaw at symphysis	1.3		pelvis .. ..	..	4.8
Width of ramus .. ..	..	1.5	Transverse diameter of true pelvis	4.6	
Interangular width .. ..	..	4.	Oblique „ „	4.7	
Mandibular angle .. ..	..	103°			
INDICES.			<i>Stature</i> as calculated from lengths of femur 4' 9". The entire skele- ton as laid out with spacing between vertebræ occupied a length of 4' 10"·5. to which an inch should be added for scalp and plantar soft parts, making in all a stature of 4' 11"·5.		
Length-Breadth Cranial ..	..	.71			
Length-Height Cranial ..	..	.76			
* Antero-posterior .. ..	..	.48			
ANGLES.					
Basilar .. ..	..	30°			
Facial at alveolar border ..	..	74°			
Facial at nasal spine .. ..	..	76°			

Description of Heliotype.

The skeleton is seen to be lying on its right side; in the contracted position the left side of the skull has been much damaged, as seen at *a*.

* For this Index, see "British Barrows" 1877, pp. 563, 667.

† This measurement only admits of being approximately obtained in the female skeleton with which we have been comparing it, it is however, about an inch less, a significant fact not without parallel in prehistoric skeletons.

Large chalk blocks *b* are arranged round the skeleton, they are seen very plainly round the back of the skeleton; the rubble, &c., which filled the pit up for an extent of 16 feet above the skeleton has not been so largely removed from the front of the skeleton, hence the chalk blocks there are not seen so plainly as they are behind it.

A beautiful flint implement *c* is seen in front of the bent knees.

d, the pelvis.

e, the left foot.

DISCUSSION.

Professor FLOWER, F.R.S., said that having only had the bones in his hands for a few minutes he was unable to add anything of importance to Professor Rolleston's able and exhaustive description of them. He could only corroborate the statement as to sex, as both pelvis and skull presented in a marked manner the masculine characters, and the age was probably not far below thirty. The face was remarkable for the lowness of the orbital index, and in this character and the form of the malar bones it showed no mongoloid affinities.

Lord ROSEHILL, speaking on the great interest attached to the skeleton just described, thought it right to mention that he had in his possession a skull, wanting only the lower jaw, which came to him with the collection of the late Mr. J. P. Tindale, marked "Cissbury Camp." Lord Rosehill had worked with that gentleman at the shaft now called "Tindale's Pit," but unfortunately was away during the latter part of the excavation, shortly after which Mr. Tindale died. Consequently he was not certain whether the skull in question came from that Pit, or from some other part of the Camp or neighbourhood, possibly Professor Rolleston might know more of the matter; and the skull would be sent to him for his examination.

Mr. R. B. MARTIN wished to ask Professor Rolleston and Mr. Park Harrison as to the position in which the skeleton was found: whether it appeared to have been carefully buried or to have been thrown in and hastily covered up? The position of the figure in the drawing differed considerably from that in the photograph.

Mr. PARK HARRISON thought it was quite possible that the cripple that had been so scientifically restored by Dr. Rolleston may have met with an accident whilst climbing up or descending the shaft, and that he was interred there owing to the difficulty of removing his remains. Dr. Kelly, hearing on the day after that on which the discovery was made, late in the afternoon, that there was a skeleton, or a portion of one, underneath the chalk *débris*, accompanied Mr. Harrison to the spot; and they spent about two hours in removing the chalk, piece by piece, to prevent the position of the bones as they lay in the shaft from being disturbed.



CAPTAIN MUMMY FROM DARFUR, KEN.

Subsequently, after the skeleton had been photographed, more of the chalk was removed, and then the blocks in front were rendered more conspicuous.

As regards the composition of the red seams, Dr. Kelly analysed some of the material from above the skeleton, and also part of the browner earth from the level bed on which it lay. He obtained alumina and much oxide of iron from both samples. There was least chalk in the clay from *beneath* the skeleton.

Some pieces of stags' horn found on the north side at the same level as the flint chips on the opposite side of the shaft were undoubtedly charred.

The photograph has been mounted upside down. The face should look to the right, as in the drawing.

Illustrations of the MODE of preserving the DEAD in DARNLEY ISLAND and in SOUTH AUSTRALIA. By WILLIAM HENRY FLOWER, LL.D., F.R.S., V.P.A.I., &c.

THE Museum of the Royal College of Surgeons has lately acquired a dried body of a man, fastened to a kind of hurdle or framework of wood, brought in 1872 from Darnley Island or Erroob in Torres Strait, by Mr. Charles Lemaistre, Captain of the French barque "Victorine." According to the statement of Mr. Lemaistre, "the mummy was found in its grave, which consisted of a high straw and bamboo hut of a round form; it was not lying down, but standing up on the stretcher. Round it and on the ground were some broken shells, bones of fishes, and a few human skulls."

The framework, or stretcher, is composed of two nearly parallel pieces of cylindrical branches of a tree with the bark on, each 6 feet in length, and about an inch and a-half in diameter, fixed at a distance of from 16 to 18 inches apart, by ten cross pieces of similar wood of smaller calibre, bound to the longitudinal lateral pieces by cord of native manufacture, formed of plaited grass or other vegetable fibre. The disposition of these pieces in relation to the longitudinal pieces and to the body is seen in the accompanying photograph (Pl. XI). At each end there are two pieces, one in front of, and one behind the longitudinal bars, as if for greater security. The rest are all tied on to the front side or that to which the body is attached. All these pieces of wood are smoothly cut at the ends, as if with a saw.

The body has evidently been fastened on to this frame, and placed in the upright position while it was fresh, and before drying. The principal points of suspension have been the

cords which pass under the axillæ and are tied to the upper cross bars. By these the shoulders are drawn up, the head being sunk between them, and inclined slightly to the right side. The arms are placed in a straight position by the sides of the body, with the dorsal surface of the hands forwards, and secured at the wrists to one of the cross bars. The legs are also secured just below the knees to another cross bar, and the feet rest upon, and are tied to, the lowest of the transverse sticks. The body is not fastened anywhere except at the four points mentioned, the shoulders, wrists, knees, and feet.

The body measured about 5 feet 2 inches from vertex to heel; the head being sunk as mentioned above, between the shoulders.* It was perfectly desiccated, and in some parts, as the thighs and feet, the dried skin and soft tissues had perished in consequence of the attacks of insects or from injuries it had received in its various journeyings before it came into possession of the College. The bones of the feet were nearly bare, and unfortunately some of the phalanges of the toes were lost. Some of the front teeth had also dropped out, otherwise the skeleton is perfect.

Suspended in front of the pubic region, was a piece of the shell of the great Indian Volute (*Melo indica*) rudely fashioned into the shape of a heraldic shield, $7\frac{1}{4}$ inches in length, and 4 inches in width at the broadest part. The upper (broad) end of this is ornamented by four transverse incised lines, about a quarter of an inch apart, between each of which is a row of circular pits, made apparently with the point of some drilling instrument. There are about seventeen of these in each row, but they are not very regularly placed, either as to distance or linear arrangement. Besides these, there are nine circular holes of larger size, bored probably by the same instrument, quite through the thickness of the shell. This is the shield which is worn by the Erroob warriors in battle in the situation of the fig-leaf of the sculptor.

The skin was everywhere hard and tough, as if it had been subjected to some tanning process, and was covered with a reddish pigment, especially conspicuous on the face and abdomen. Chemical analysis showed that iron was the basis of the colouring matter. There was not a vestige of hair upon any part of the surface, all having probably fallen out in the natural process of decay. The hair appears to have been on the scalp at the time of preparation, as the red colour extends up the face only as far as the skin would be bare, and the upper part of the head is black, forming a marked contrast to the rest of the skin. The same condition is to be observed in other

* The height of the articulated skeleton is 5 feet 4 inches.

similarly prepared mummied heads from the same locality, and may be attributed to the fact that the hairy covering, though it may subsequently fall off, protects the scalp from the action of the red preparation with which the skin is besmeared.

The sockets of the eyes were filled with a dark brown substance, apparently a vegetable gum like gutta-percha, as it softens with heat and burns with a smoky flame. In this was embedded a narrow oval piece of mother-of-pearl, pointed at each end, in the centre of the anterior surface of which is fixed a round mass of the same resinous substance, representing the pupil of the eye. On close examination, it was found that the eyeballs and other contents of the orbits had not been removed, but that the artificial representatives of the eyes had been placed *over* the sunken lids. Both nostrils had been distended by some substance placed within them, but now removed. The lips had not been fastened together, but had widely retracted, thus unfortunately allowing of the loss of some of the incisor teeth spoken of before. The lower jaw had however been secured from falling down by a strong plaited cord, like that used in constructing the supporting frame, which had been passed beneath the lips and skin close to the bone, through the right nasal cavity, passing out behind at the posterior nares, and round the ramus of the mandible, and secured by a knot in front. This was probably done after the tongue, hyoid, and larynx had all been removed through the mouth, as no remains of these parts were found. The brain cannot have been removed, for the walls of the orbits and nasal chambers were intact, and it would not seem possible to extract it through the foramen magnum without greater external damage than the body had sustained.

In the right flank was a longitudinal incision, $3\frac{1}{2}$ inches in length, extending between the last rib and the crest of the ileum.* This had been very neatly closed by what is called in surgery the interrupted suture, seven separate ligatures being placed upon it. Through this, it was evident, the whole of the pelvic, abdominal, and thoracic viscera had been removed, as no vestige of them remained in the body, and their place was occupied by four pieces of very soft wood, roughly split from the interior of some endogenous tree, each being from 12 to 15 inches long. Except the wound in the flank, there was no other opening or injury to the skin.

Having taken this description and a photograph of the mummied body, I have had the skeleton, which is that of a

* The ancient Egyptians, as is well known, removed the viscera from the bodies about to be preserved as mummies, through an incision in the same situation, but on the left side.

powerful muscular man in the prime of life, prepared for the osteological series of the Museum of the College of Surgeons, and the framework, cord, and shield will be deposited in the Christy collection of the British Museum.

Heads of bodies prepared in a similar manner from Darnley Island are to be seen both in the Museum of the College and in the British Museum, but I am not aware that any entire body has been previously brought to Europe; though it is probable that the custom of preserving the dead in this fashion is common in the Island.

Jukes relates* that on one of his visits, "under some trees outside the fencing, were sitting two old women, one of whom was Seewai's wife, the other Keouck's. The latter had on her lap the body of a child, a few months old, and which seemed to have been dead some time. It was stretched out on a framework of sticks, and smeared over with a thick red pigment, which dressing she was now renewing. It was much shrunk, with the skin hanging in loose folds, but had no other appearance of decomposition. As soon as she had smeared it all over, she hung it up behind her in the shade of a bush, talking and laughing quite unconcernedly. Keouck said it was his 'pic-caninny.' The two women had their heads closely shaven and smeared, as well as their faces, with a white pigment, but had no other sign of mourning about them."

Macgillivray† says: "The natives always objected to show to me the inside of their huts, many of which we knew were used as dead-houses. . . . Several human skulls were brought down for sale, also a little shrivelled mummy of a child. Some of the former had the skin quite perfect, the nose artificially restored in clay, mixed with a resinous substance, and the orbits occupied by a diamond-shaped piece of mother-of-pearl, with a black central mark."

On making inquiries regarding this custom from Signor D'Albertis, who has been in Darnley Island more recently than either of the travellers quoted above, he told me that a woman there asked him if he would like to see her husband. On his assenting, she conducted him into her house, where, to his surprise, he found the man, dried and painted, and placed in the upright position exactly like the specimen described above.

Before leaving the subject of Darnley Island mummies, it may be worth mentioning that in the British Museum is a very

* "Narrative of the Surveying Voyage of H.M.S. 'Fly,' commanded by Captain F. P. Blackwood, R.N., in Torres Strait, &c., during the years 1842-46" (1847), p. 246.

† "Narrative of the Voyage of H.M.S. 'Rattlesnake,' commanded by the late Captain Owen Stanley, R.N., during the years 1846-50" (1852), p. 48.



AUSTRALIAN MUMMY FROM ADELAIDE

remarkable microcephalic head from that locality, which has been preserved in the usual manner, though the skin is now nearly all stripped off it, so that its characters can be well seen. It is entered in the catalogue as the head of an "idiot," though whether this is an inference from its extremely small size, or whether a statement of the known character of the individual while living, I cannot say. It belonged to a young person apparently of the male sex, and from sixteen to eighteen years of age, as the basilar suture is not united, but all the permanent teeth are in place, except the third molars, which were on the point of eruption. The circumference of the cranium is 422 millim., the length 152, the breadth 110, the height 116, and the capacity only 830 cubic centimetres. The average capacity of seven normal Torres Strait Islanders in the College of Surgeons' Museum is 1320, the smallest being 1225.

The second illustration of modes of preserving the dead among barbarous people, which I have to bring before the Institute this evening, is a dried mummy of an adult male Australian from the neighbourhood of Adelaide, which was presented to the Museum of the Royal College of Surgeons in 1845, by Sir George Grey, at that time Governor of South Australia. It is described on a label attached to it, as "one of a tribe in which the practice exists of drying the corpse and preserving it above ground." As the skeleton will form a more instructive specimen when the dried and decaying integuments are removed, I have had it cleaned, but before doing so a photograph was taken of the body (Pl. XII), and such observations upon the mode of preservation and preparation as its condition permitted of were made.

The attitude was very peculiar, the limbs being trussed up closely to the sides, in a position impossible for the living body to assume, and the head was thrown back. The thighs were forcibly bent upwards by the sides of the body, so that the knees were placed behind the shoulders; the legs were tightly flexed on the thighs, the heels being close to the hip-joints; the fore-arms were crossed in front of the lower part of the abdomen, each hand resting on the foot of the opposite side. A broad bandage of netting of native manufacture, was fastened horizontally round the middle of the body, to retain the limbs in this position.

The surface of the skin was of a dark reddish colour, having apparently been covered with red ochre, as in the case of the Darnley Island mummy. Though the hair of the scalp had nearly all disappeared, some still remained on parts of the arms, limbs, and trunk, specimens of which have been preserved for microscopic examination.

The mouth was stuffed with emu's feathers, and the lips were

tightly sewn up by continuous suture, the end of the string used hanging down from the left corner, and having some emu's feathers twisted into it, forming a sort of tassel, depending on to the chest, as seen in the photograph; the nostrils were also sewn up. The tongue, larynx, &c. had not been interfered with, and the hyoid bone was *in situ*. The thoracic and abdominal viscera had apparently not been removed or disturbed, as their dried remains were found in their respective cavities; but decay and insects had caused so much destruction to these parts that their condition could not be satisfactorily ascertained. No artificial opening could be seen in the abdominal walls, but the anus had been sewn up, and as if with the greatest care to close all the natural apertures of the body, the prepuce, drawn down beyond the glans, had a cord tied tightly round it.*

It will thus be seen that even among so rude a people as the aboriginal Australians, some pains had been taken in carrying out what was considered the decent and orderly disposal of their dead, although the art displayed on the occasion was inferior to that exhibited by the more civilised Papuans of Darnley Island.

DISCUSSION.

MR. HYDE CLARKE urged the importance of Professor Flower's demonstrations in reference to their bearing on the connection of the Australian populations with those of the main continents, and in the influence exerted in Australasia at a former time by a more highly cultivated race. This, to his mind, was the explanation of the relations of the higher culture, whether with regard to language, marriage and kindred, weapon names, or modes of culture, such as the mummies now described, the modes of incision and form of burial. He did not consider these institutions, as some great authorities did, indigenous in Australia or as necessary proofs of the community of a black race. He thought the consideration of the whole of the phenomena was adverse to such a conclusion. The Peruvian mummies, he believed, belonged to a later race than the black. The mummy in a contracted form, he would suggest, was the substitute for the burial of the owner in a contracted position under the hearth of his own house, and had the same relation to

* Compare the description of funeral rites in R. Brough Smyth's "Aborigines of Victoria" (1878) where Mr. H. E. Meyer, speaking of the Encounter Bay tribe in South Australia, says: "The person who sews up the apertures of the corpse runs some risk if he does not provide himself with a good string; as if the string should break, it is attributed to the displeasure of the deceased, who is supposed to make known in this manner that he has been charmed by him; also if the small quill used as a needle should not be sufficiently sharp to penetrate the flesh easily, the slightest movement caused by pressing the blunt point into the flesh is supposed to be spontaneous motion of the corpse, and to indicate that the sewer is the guilty person" (Vol. i, p. 113).

ancestor worship. He appealed to Mr. Park Harrison for support as to the sacred character of the red colour, its symbolic applications for man and in the shape of the red hand, diffused in America and the Old World. He observed that according to his own investigations the weapon names of Australia were not peculiar, but belonged to the general class. He stated that the Myfoar and Motu languages of New Guinea belonged to the epoch of early culture, another point in reference to the precedence of a higher race, as did the grammatical and other phenomena of the Australian languages.

JANUARY 21ST, 1879.

JOHN EVANS, Esq., D.C.L., F.R.S., *President, in the Chair.*

The minutes of the previous meeting were read and confirmed.

The following presents were announced and thanks were ordered to be returned to the respective donors for the same:—

FOR THE LIBRARY.

- From the ASSOCIATION.—Report of the British Association, 1877, Plymouth.
- From the EDITOR.—*Materiaux pour l'Histoire de l'Homme*, Nos. 6–10, 1878.
- From the Editor.—*Revue d'Hygiène et de Police Sanitaire*, No. 1, 1879.
- From Dr. PAUL BROCA.—*Revue d'Anthropologie*. Vol. II, No. 1, 1879.
- From the SOCIETY.—*Journal of the Asiatic Society of Bengal*. Vol. XLVII, Part 1, Nos. 2 and 3; Part 2, No. 3. *Proceedings* ditto, Nos. 1, 8, and 10.
- From the EDITOR.—*Revue Scientifique*, Nos. 28 and 29, 1879.
- From the EDITOR.—*Revue Internationale des Sciences*. No. 1, January, 1879.
- From the EDITOR.—“*Nature*” (to date).

Mr. E. W. Brabrook read a communication, by M. le Dr. Paul Topinard, Prof. à l'Ecole d'Anthropologie de Paris, Hon. M.A.I., “On Resemblances between a Galtcha and a Savoyard Skull.” This will appear in a future number.

ANNUAL GENERAL MEETING.

JANUARY 28TH, 1879.

JOHN EVANS, Esq., D.C.L., F.R.S., *President, in the Chair.*

The notice convening the meeting was read.

The minutes of the previous meeting were read and confirmed.

The Treasurer's Financial Statement for 1878, was read and adopted on the motion of Mr. F. W. BRABROOK, seconded by Mr. A. L. LEWIS.

THE ANTHROPOLOGICAL INSTITUTE OF GREAT BRITAIN AND IRELAND.

Statement of Accounts for the Year ending 31st December, 1878.

RECEIPTS.

	£	s.	d.	£	s.	d.
BALANCES, January 1st, 1878:						
At Bankers'	101	4	1			
In Clerk's hands	2	0	9	106	4	10
SUBSCRIPTIONS:						
Paid to Roberts and Co.	57	15	0			
" Collector	452	11	0			
" due 1877	60	18	0			
" in advance	5	5	0	576	9	0
SALE OF PUBLICATIONS:						
Messrs. Treubner and Co.:						
Journals	57	2	9			
Messrs. Longman:						
Publications of Institute	2	1	10			
Office:						
Journals	2	14	3			
Other Publications	3	18	6	65	17	4

£768 11 2

Audited and found Correct.

(Signed)

O. H. E. GARMICHAEL.

Treasurer's Financial Statement.

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	£	s.	d.	£	s.	d.
RENT, one year to September				130	0	0
PRINTING:						
Journal, Balance of No. 20	4	6	0			
" Nos. 21, 22 (1877), Nos. 23, 24 (1878)	232	15	0			
List of Members	10	3	0			
Miscellaneous	11	11	6			
LITHOGRAPHY:				258	15	6
Enslin, to December, 1877	3	18	9			
Machine, Enslin, and Kell, 1878	63	3	8			
Stubs, wood engraving	6	6	0			
PHOTOGRAPHY:						
Weight						
SALARIES:						
Clerk	100	1	0			
Collector's Commission	29	3	4			
POSTAGE:				129	4	4
Journal	11	11	10			
Letters, Circulars, and Post Cards	15	4	11			
ADVERTISING:				29	16	9
Street, to December, 1877	3	8	0			
" September, 1878	6	16	9			
OFFICE:				10	4	9
Stationery, to December, 1877	2	7	11			
" September, 1878	5	0	7			
Furniture	7	0	0			
Receipt and Bill Stamps	2	4	9			
Binding	3	1	3			
Insurance	18	0				
Book Papers	2	16	7			
Subscription to Oriental Congress	0	10	0			
Miscellaneous	2	0	0			
HOUSE:				25	19	1
Lyes, gratuity for 1877	15	0	0			
" coals and lights	4	10	6			
" assistance, parcels, &c.	5	4	9			
BALANCES:						
At Bankers'	57	1	5			
In Clerk's hands	0	15	8			
				57	17	1
				£748	11	2

MR. MONCURE L. CONWAY and MR. ROBERT B. HOLL were appointed scrutineers of the ballot, which was then declared by the President to be opened.

MR. E. W. BRABROOK then read the Reports of Council for 1878.

REPORT of COUNCIL of the ANTHROPOLOGICAL INSTITUTE of
GREAT BRITAIN AND IRELAND for 1878.

THE Institute has held fifteen ordinary meetings, and one anniversary meeting during the year, at which the following communications were read:—

1. On a Collection of some 150 objects from the Andaman and Nicobar Islands, obtained by him through E. H. Man, Esq. By Major Gen. A. Lane Fox, F.R.S.
2. Notes on the Ethnology of the Motu. By the Rev. W. Y. Turner, M.D.
3. On a Discovery of Palæolithic Implements in the Valley of the Axe, Devon. By John Evans, Esq., D.C.L., F.R.S.
4. On Colouring Matter found in Human Hair. By H. C. Sorby, Esq., F.R.S.
5. On Bird-shaped Mounds in Putnam County, Georgia. By the Hon. C. C. Jones, Jun.
6. On Stone Implements from Natal. By John Sanderson, Esq.
7. On Primitive Culture of Babylonia. By W. St. Chad Boscawen, Esq.
8. On the Natural Language of the Deaf and Dumb. By Professor Graham Bell.
9. On the Original Range of the Papuan Race. By Francis A. Allen, Esq.
10. On Rock Paintings in New Zealand. By Dr. Jules Von Haast.
11. On Inductive Metrology. By W. M. Flinders Petrie, Esq.
12. On the Game of Patolli in Ancient Mexico, and its probably Asiatic Origin. By E. Burnet Tylor, Esq. D.C.L., F.R.S.
13. On Composite Portraits made by combining those of various persons into a single resultant figure. By Francis Galton, Esq., F.R.S.
14. On the Origin of the Classificatory System of Relationships used among Primitive People. By C. Staniland Wake, Esq.
15. On the Devil's Arrows, near Boroughbridge, in Yorkshire. By A. L. Lewis, Esq.
16. Description of a Male Skeleton found at Cissbury. By Prof. George Rolleston, M.D., F.R.S.
17. Excavations at Sigwell, in Cadbury, by a Committee of the British Association. By Prof. George Rolleston, M.D., F.R.S.
18. On Buddhism in the British Provinces of Little Tibet. By Colonel Paske.
19. On the Piojés of the Putamayo. By Alfred Simson, Esq.
20. Vocabulary of the Zaparo Language. By Alfred Simson, Esq.
21. On the Bulgarians. By Dr. John Beddoe, F.R.S.
22. Ethnological Hints afforded by the Stimulants of the Ancients and of Modern Savages. By Miss A. W. Buckland.
23. On Polygamous Marriages in South Africa. By J. Sanderson Esq.
24. On the Ethnology of the Islands of the Pacific. By the Rev. S. J. Whitmee.
25. On Palæolithic Implements from the Gravels of N.E. London. By Worthington G. Smith, Esq.
26. On a New Method of finding the Cranial Index. By G. M. Atkinson, Esq.

27. Report on Anthropological Proceedings at the Oriental Congress. By Robert Cust, Esq.
28. On some Characters tattooed on a Motu Woman. By J. Park Harrison, Esq., M.A.
29. On the Evils arising from the use of Historical National Names as Scientific Terms. By A. L. Lewis, Esq.
30. On some American Illustrations of the Evolution of New Varieties of Men. By Prof. Daniel Wilson, LL.D.
31. Finds in Midian. By Capt. R. F. Burton, F.R.G.S.
32. Notes on Skulls from Midian. By Prof. Richard Owen, C.B., F.R.S., and Dr. C. Carter Blake.
33. On Left-Handedness. By Dr. Muirhead.

Fourteen Ordinary Members have been elected during the year.

Dr. Paul Topinard has been elected an Hon. Member, and Dr. Ernest Lambert, Corresponding Member.

The Institute has lost through death Mr. G. V. Vernon, Mr. James Bonomi, Mr. E. T. Stevens, Sir F. M. Williams, Mr. A. Trevelyan, Mr. J. Tennant, and Mr. W. Blackmore, Ordinary Members, and Prof. Joseph Henry, and Sir J. Gardner Wilkinson, F.R.S., Honorary Members.

Mr. BONOMI, the accomplished curator of the Soane Museum and distinguished Egyptologist, was known to the Institute as the inventor of an ingenious instrument for ascertaining the relations between height and length of arm, which he exhibited and described on the 20th May, 1872.*

Mr. E. T. STEVENS, of Salisbury, the son of a local magistrate and man of business, was attached from his earliest years to geological, antiquarian, and archaeological pursuits, having been educated at the school of Mr. Hatcher, the historian of Salisbury. He took deep interest in the history and antiquities of that city, and in the primeval relics with which Wiltshire abounds, and was for many years secretary to the Wiltshire Archaeological and Natural History Society. Geological discoveries, which were made some twenty years ago, invested flint implements with a new interest, and at length the attention of antiquaries was directed to the drift beds in the neighbourhood of Salisbury, where a number of flint implements were found by Mr. Stevens and others. Being greatly interested in this discovery, Mr. Stevens visited the Valley of the Somme, near Abbeville, in France, where M. Boucher de Perthes had found similar implements in the drift, and subsequently devoted much time and attention to the study, not only of the implements of Palæolithic age, but also of those of the Neolithic

* "Journal Anthro. Institute." Vol. ii, p. 180.

period. Mr. Stevens was a thorough archæologist, to which the many papers he contributed from time to time to various archæological publications, and notably his well-known volume entitled "Flint Chips," bear ample testimony. In the year 1863, there fell upon Mr. Stevens the onerous work of arranging and classifying one of the finest collections in the world of stone implements and other objects of art of the aboriginal inhabitants of America, which was placed in Salisbury by Mr. W. Blackmore, his brother-in-law, whose loss we have also to deplore. When the Salisbury and South Wilts Museum was opened in 1864, a descriptive catalogue of the contents was published, the work being edited by Mr. E. T. Stevens, who not only minutely and elaborately described the stone, bronze, and early iron objects in the exhibition, but furnished the anastatic drawings of the rugged tools and weapons of flint, stone, and bronze, which illustrate the work. In 1870, at the request of Mr. Blackmore, Mr. Stevens published a work, entitled "Flint Chips: being a Guide to Pre-historic Archæology as illustrated by the collection in the Blackmore Museum." On the appearance of this work it was noticed favourably by the leading scientific and literary publications of the day, and was considered to be a valuable contribution to the knowledge of pre-historic archæology. The great industry which was displayed in its production, combined with immense research and considerable literary skill, placed its author at once in the front rank of English writers on the subject. His last printed work was entitled "Jottings on some of the Objects of Interest in the Stonehenge Excursion, on Thursday, August 24th, 1876," issued during the last visit to Salisbury of the Wiltshire Archæological Society, and we understand that when Mr. Stevens was seized with illness he had another archæological work in the press. He was for a short time a member of the Town Council, and of the Salisbury School Board.

He became a member of the Anthropological Institute in 1876, but did not enrich our proceedings with any communication. He was also F.S.A., F.R.G.S., Hon. Director of the Salisbury and South Wilts Museum, Hon. Curator and Trustee of the Blackmore Museum, Corresponding Member of the Academy of Natural Sciences of Philadelphia, Foreign Member of the Anthropological Institute of New York, &c.

In him archæology has lost one of its most enthusiastic and enlightened workers. He died on Sunday, August 18th, 1878.

Mr. W. BLACKMORE, whose name has just been mentioned as the founder and the munificent donor to the town of Salisbury of the Blackmore Museum, which by his endowment will remain

a permanent monument of his enlightened zeal for anthropological science, was elected a Member of the Ethnological Society of London in 1866, and in the same year he became a Member of the Council. On 27th April, 1869, he communicated a valuable paper on the North American Indians; a sketch of some of the hostile tribes, together with a brief account of General Sherman's campaign of 1868 against the Sioux, Cheysune, Arapahoe, Kiowa, and Comanche Indians (Journal N.S., i, 287). In the autumn of 1868 he had visited the Far West, and in addition to traversing the valley of the Platte, and thence across the Rocky Mountains to the Salt Lake City, he passed through the centre of the disturbed district; and his paper was written with the practical object of furnishing materials for the guidance of statesmen in dealing with aboriginal peoples. He estimated that in two centuries the Indian population had diminished from 2,000,000 to 500,000, and sought to trace some of the causes, principally disease and the encroachments of the whites. The paper contains a valuable body of information as to tribes which have even since then suffered further diminution. Upon the constitution of the Anthropological Institute, he joined the Council as one of the representatives of the Ethnological Society, and became a Vice-President in 1872. After a year's absence from the Council, he returned to it from 1874 to 1877, and though he did not make any further contribution to our proceedings, his assistance and advice at the Council, and his presence at our evening meetings, were highly valued by his colleagues.

The other members who died during the year, several of them distinguished in various branches of science, have not contributed to our proceedings.

The former and present state of the Institute with regard to the number of Members are shown in the following Table.

	Honorary.	Compounders.	Annual Subscribers.	Total.
January 1st, 1878 ..	51	94	233	478
Since elected	+1	..	+14	+15
Since deceased ..	-2	-2	-5	-9
Since retired .. ..	..	..	-22	-22
January 1st, 1879 ..	50	92	320	462

The following are the names of donors to the Library and Museum during the past year:—

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Mr. JOHN EVANS moved, and Mr. HYDE CLARKE seconded the adoption of the Report. Carried.

The President then delivered the following Address:—

On the occasion of another anniversary meeting of this Institute, it again becomes my duty to review our proceedings during the interval which has elapsed since our last anniversary, and to invite you to consider our present position and future prospects. I think that on the whole we may look back upon the last year with some degree of satisfaction, inasmuch as the communications which have been brought before us do not, either in number or in importance, fall short of those of any previous years. Our numerical strength

is however somewhat reduced. Our financial position also seems to have slightly deteriorated; in fact, rather more so than appears on our balance-sheet, as there would have been greater liabilities but for a delay in the publication of our Journal. Looking at the great importance of punctuality in all periodical publications, and at the advantages which will accrue from the memoirs communicated to us being promptly placed in the hands of our members and of the public, I trust that steps will be taken by the Directors and the Council by which the arrears of the Journal may be quickly made up, and all future delay in its appearance avoided. Turning now to the papers which have been read at our evening meetings, I have, following the example of my predecessors in this chair, and especially that of General Lane Fox, attempted to classify them under the various heads which he has suggested, and to give a short summary of the most important among them, together with a few casual observations upon some of the points suggested by them.

IN DESCRIPTIVE ETHNOLOGY.—We have had three papers:—

1. "Notes on the Piojés of the Putumayo," by Mr. Alfred Simson. This paper, written from actual observation, gives a good idea of the condition of some of the native tribes of Equatorial America, under the influence of what by courtesy is called Christianity. Though to some extent outwardly conforming to the religion which has been rather forced upon them than spontaneously adopted, they still retain many of the customs and beliefs of their more primitive condition. The plucking out of eyebrows and eyelashes, the perforation of the septum of the nose, the fasting of both father and mother after the birth of a child, the belief in the efficacy of a medicine against snake bites being due to its sojourn in an alligator's tooth, and the allowing the hands to be stung by ants in order to obtain proficiency in the use of the bow and arrow, all carry us back to the times before European influences were felt, and offer

points for comparison with the customs of other races. One curious feature in the Piojés is their liability to a catarrh which often proves fatal, and is said to be readily contracted by mere contact with white men. The author has added to the value of his paper by appending a vocabulary of the Zaparo language.

2. "On the Ethnology of the Islands of the Pacific," by the Rev. J. S. Whitmee. From long residence in these islands, the author has been enabled to arrive at some definite conclusions as to the ethnology of the inhabitants. He regards the Melanesians or the black race, which not improbably has affinities with other negrittos found in the southern hemisphere, as the aboriginal people. Next comes the brown Malayo-Polynesian race which probably came in from the West, and lastly, the Micronesians, who are however but rarely found of pure blood. In a subsequent paper by the same author, suggestions are made for a new nomenclature of these different races.

3. "Ethnological Notes on the Koitapu, Motu and neighbouring tribes of New Guinea," by the Rev. W. G. Lawes. A three years' residence at Port Moresby has enabled the author to gather many details as to this district of New Guinea, in which within 300 miles of the coast no less than 25 different dialects and languages are spoken. The Motu and Koitapu are found living at different ends of the same village, but still preserving their distinctive character. The Koiari who are allied to the latter, though physically inferior, occupy the mountainous districts inland. What will be the result of European intercourse with this varied population will form an interesting study for future anthropologists.

ARCHÆOLOGY.—*Nine papers.*

1. "Bird-Shaped Mounds in Putnam County, Georgia." Mounds of this character have been observed in great numbers in some parts of the United States, as for instance in Wisconsin, representing a number of different objects both animate and inanimate. They are, however, mainly confined to the northern

part of the States, and the interest of this paper consists in the discovery of similar mounds far away to the south-east in Georgia, thus widely extending the area over which these remarkable structures occur. How far they are sepulchral in character remains to be ascertained, though circular tumuli, sometimes of considerable size, have been observed in the same district, and have proved to contain human remains.

2. "Note in connection with Stone Implements from Natal," by Mr. J. Sanderson. Although the stone weights for digging-sticks, stone mullers, and even stone hammers for working in iron are still in use among the Zulus, there have as yet but few traces been discovered in Natal of a Stone-age properly so called. The specimens exhibited were for the most part rude in character, and formed by chipping rather than by grinding. Mr. Gooch, however, in a note cited by Mr. Sanderson, mentions seven or eight types of implements as found in Natal, and more than hints at the occurrence of Palæolithic instruments in that colony. It will, I think, be well to wait for further information before adopting any definite views upon this subject.

3 "Notes on some Rock Paintings in New Zealand," by Dr. Julius von Haast. There is a general similarity between these rock-paintings and those which have been observed in other savage countries, as for instance in Southern Africa, though in some respects these rank higher as "Works of Art" than those executed by the Bushmen. Curiously enough, those described in this paper occur in a rock-shelter which from its description must be much like one of the Caverns of the Dordogne, and more remarkable still is the fact that they are executed in red oxide of iron, which, as is well known, was used as a pigment by the cave-men of Southern France, as proved by the flint-scraped fragments of hematite of which so many specimens have been found. If, however, these early troglodytes used their red paint for mural decorations, these have long since perished, though their carvings and engravings in bone prove them to have had higher artistic skill than the New Zealand painters.

These latter also used a black pigment besides the red, though the sketches in black are ruder, and are thought to have been executed by a different race of men. Certainly both sets of paintings appear to be distinct from the usual Maori designs, and there is some probability that they may be of a mythological character, rather, than as is often the case, records of passing events.

4. "On Inductive Metrology," by Mr. Flinders Petrie. The object of the author was to call attention to a method of deducing from the measurements of ancient structures, the metrical unit in use among those who formed them. Where carefully constructed buildings, such as those of Egypt, Greece and Rome are still in existence, it seems in the highest degree probable that the length of the foot, cubit or other unit of measure may be recovered by means of the various dimensions of the rooms and walls of the building, as multiples of the unit or its aliquot parts are certain to have been employed where any system of measurement was in use. How far any such system may have been employed by those who constructed the early tumuli and earthworks of this and other countries is a question open to discussion—Mr. Petrie has however found that the units which he has deduced from the actual measurements of numerous different camps and earthworks, principally in our southern counties, have nearly coincided. It may however be the case that the step or pace, was in many instances the primitive unit, and with men of the same stature the variation in its length would be but slight. Perhaps a corresponding inference of the stature of the race who constructed these monuments, derived from the length of these paces, would not be entirely worthy of confidence. Mr. Petrie's remarks on the all but perfectly elliptical form of the camp near Orcheston are suggestive of some knowledge of geometry far beyond that which is usually assigned to primitive races. The drawing of a circle by means of a cord and central peg might, however, not unnaturally lead to the discovery of the method of drawing an ellipse by means of a cord and two fixed pegs, the tracing peg

being kept in its course by the doubled cord being held out to its fullest extent.

5. "The Game of Patolli in Ancient Mexico, and its probably Asiatic Origin," by Mr. E. B. Tylor, D.C.L., F.R.S. The history of our common games, such as chess and backgammon, going back as it does into highly remote ages, is one which is naturally of great interest and calculated to illustrate the different phases of human progress through which these games have survived. It is, however, not a little remarkable that the early Spanish invaders of Mexico should have found on their arrival in the new continent a game in common use which bore a striking likeness to the old game of "tables" as practised on the other side of the Atlantic. The same, or a closely analogous game, proves to have been in use also among the Indians of North America, but the most remarkable feature discovered by Mr. Tylor is the close resemblance of the *Patolli* of the Mexicans to the *Pachisi* of the Hindus. He shows the improbability of the game having been introduced into America by European intercourse, and suggests the possibility of Asiatic vessels having drifted across the Pacific to California, the sailors in which brought the game with them, and points out that if this were the case, other features of American culture may be due to Asiatic influence.

While speaking of games I may just mention the curious little square pieces of bone of which sets of four, one plain and the other three each differently marked, have been found by Sir Richard Colt Hoare* in one of the Wiltshire barrows, and by the Rev. W. Greenwell† in one of those on the Yorkshire wolds. The latter were perforated, the others not, so that they can hardly have been beads. If, however, as seems extremely probable, these were pieces in use for some game, we have here another instance of comparatively wide prevalence of a particular game in remote times, and it may prove to be the case that when more is known of the contents of the grave mounds of the continent

* "Ancient Wilts." I., p. 212.

† "British Barrows," p. 275.

of Europe, we shall find traces of its use in other countries than Britain.

6. "The Devil's Arrows, Yorkshire," by Mr. A. L. Lewis. This paper besides giving accurate measurements of this series of menhirs, within the last two centuries unfortunately reduced in number from five to three, gives also an account of the manner in which heavy monoliths are transported and erected at the present day by some of the hill tribes of India. By an ingeniously contrived system of framework, power is given for a large number of men to assist in the carriage of a block of stone, so much so, that one weighing twenty tons is said to have been carried bodily up a hill 4000 feet high in a few hours. The simplicity of the arrangement is such as to render it probable that similar means of transport may have been in use in early times. The fact of such blocks being still transported by manual labour at all events lessens any wonder that may arise as to how the large standing stones of this and other countries were brought into position.

7. "Report on the Excavation of a Twin Barrow and a Single Round Barrow, at Sigwell, Parish of Compton," by Professor Rolleston, F.R.S., and Major-General A. Lane Fox, F.R.S. These excavations, towards which the British Association made a grant of funds, have corroborated the fact already known that among the men of the Bronze Age who practised cremation, the bones were not always interred in urns, but occasionally either laid unprotected in the ground, or else collected in some envelope of more perishable material than pottery—in one instance in this case, in a coffer formed of bark. A camp in the immediate neighbourhood of the barrows, and referred to the Stone Age, or possibly to that of Bronze, is shown by General Lane Fox to have been constructed with the view of commanding the six springs or wells beneath it, from which Sigwell takes its name. Another small camp in the neighbourhood also covered a spring.

8. "Palæolithic Implements from the Gravels of North-East London," by Mr. Worthington G. Smith. The persevering

researches of the author have brought to light flint implements in various places within the valley of the Lea, the Lower Clapton and Shacklewell gravels having been the most prolific. The latter are of especial interest as containing beds in which the locally extinct *Corbicula fluminalis* occurs. Higher up the Lea valley, a few implements have been found, but the exact relation of the containing gravels to the glacial deposits of the district has not, I believe, as yet been determined. At least one of the pointed implements appears to have formed part of gravel from the neighbourhood of Hertford, though it was found on a road close to Finsbury Park. Since this communication was made to us, Mr. Smith has discovered a number of microscopic objects in gravel of the Lea valley at a depth of 12 feet from the surface, among them a portion of human hair. If this be, as is believed, of Palæolithic age, it exhibits in a marked degree the durability of such a substance under certain conditions. The success of Mr. Smith's microscopic investigations offers a great incentive for the prosecution of similar researches in other localities.

9. "Finds in Midian," by Captain Richard F. Burton. In this paper, besides giving some account of his recent travels in Midian, the author entered into the question of the existence of a Stone Age in Egypt and the adjacent countries. He also exhibited specimens of stone implements from Midian, which may or may not belong to a period when metals were unknown as materials for cutting tools. The skulls which he brought from Midian formed the subject of another paper.

ETHNOLOGY—*Five Papers.*

1. "On the Original Range of the Papuan and Negritto Races," by Mr. Francis A. Allen. These races, like so many others in the same stage of culture, seem destined either to absolute extinction, or to such a modification that their characteristics will be no longer recognisable. The view of the author is that at one time they occupied a far larger district

than that which they now occupy or even lately occupied. He would indeed connect them with the black races of Africa on the West, and regard them as reaching so far as America on the East. Certainly, some traces of a negroid population seem to exist over a large part of Southern Asia, and the remarkable passage in Herodotus as to the straight-haired Eastern Ethiopians from Asia, which is cited by Mr. Allen, offers much matter for consideration; but the whole subject is one into which it is impossible to enter in an address of this kind, even were it within my power to do so with any pretence to a wide knowledge of the facts of the case.

2. "The Spread of the Slaves, Part II. The Southern Serbs, Bosnians, Montenegrins, and Herzegovinians," by Mr. H. H. Howorth, F.S.A. At a time like the present, when so much attention is being directed to the question of the races occupying, what until lately formed Turkey in Europe, this paper is most opportune—and those who wish to comprehend the history and origin of the various subdivisions of the great Serbian stock will do well to study its details. The author's conclusions are, that the Croats, Bosnians, Montenegrins, and Herzegovinians had all one common origin in a race which first emigrated to the South of the Danube and the Save, about the beginning of the seventh century; that they were a race themselves incapable of originating or carrying out great innovations or great conquests, but were led and governed by a caste of foreigners; that these leaders belonged to the great Alanic family, from whom, indeed, the name of Serbs was derived, and lastly that the main body of the race is of the same stock as the Ruthenians of Galicia and its borders. In connection with this subject, I may perhaps venture to refer to "Through Bosnia and Montenegro on Foot," and the "Illyrian Letters," written by my son, with whose opinions Mr. Howorth in the main agrees, and from the pages of which he gives numerous quotations.

3. "The Bulgarians," by Dr. Beddow, F.R.S. This paper, based partly on observations of Virchow and Kopernicki, and partly on those of the author himself, treats both of the physical

and moral characteristics of the Bulgarians. The crania differ from those of the Slaves and Turks, nor are they much like the Esthonian forms, but more nearly approach the Ugrian. Though possessing industry and ambition, the Bulgarians are regarded as ferocious rather than heroic; superstitious, rather than religious; and though susceptible of improvement, as at present devoid of manliness, generosity, and truthfulness, qualities which Russian interference does not seem calculated to promote.

4. "Report on Anthropological Proceedings at the Oriental Congress," by Mr. R. Cust. A useful digest of such papers and discussions at the Congress as bore upon our science.

5. "On the Evils arising from the use of Historical National Names as Scientific Terms," by Mr. A. L. Lewis. The author considers that although in early times there were at the least three primitive races in Europe, yet that even at a remote period they were already somewhat mixed, while at the present day their representatives appear not only in most European nations, but in the same families, and among children of the same parents. He therefore advocates the discontinuance of the use of political names as Ethnic names, and recommends the employment of terms based on the physical characteristics of the individual.

6. "Revised Nomenclature of the Inter-Oceanic Races," by the Rev. S. J. Whitmee. The author is disposed to abolish the terms Melanesian and Micronesian, retaining Polynesian, if thought necessary, as an equivalent for Inter-Oceanic. For the Eastern Polynesians and New Zealanders, he proposes the new term Sa-why-ori—compounded from Samoan, Owhyhee, and Maori; and for the North-Western Polynesians, that of Tārapon, formed from Tarawah and Ponapi. No doubt there are objections to names which, like that of Malayo-Polynesians, seem to involve a theory. There are however, objections also to the employment of new terms, where by some recognised restrictions the old can be brought into harmony with the facts. If new terms are accepted, those suggested by Mr. Whitmee seem well adapted for their purpose.

COMPARATIVE ANATOMY—*Four Papers.*

1. "On the Colouring Matters found in Human Hair," by Mr. H. C. Sorby, F.R.S. Among the few physiological papers which have been communicated to us, this is perhaps of the greatest interest and importance. The colour of the hair in different races of men has, as well as its general texture, been long regarded as an important characteristic. Little, however, has been known as to the chemical constituents of the colouring matter, though the connection between the colour of the hair and eyes has often been noticed, and the learned term of "*pigmentum nigrum*" has, as is not unfrequently the case with such terms, served to throw a kind of veil over our ignorance. Mr. Sorby has succeeded in discovering three or four distinct pigments in hair which serve to give to its horny basis the various colours with which we are familiar. One of these, the pink, is of a somewhat doubtful nature, but the brown-red, the yellow, and the black constituents seem to be satisfactorily established, though the character of the red, and the yellow is somewhat unstable and liable to change under the action of heat and acids. The black constituent is much more stable, and appears to be a compound of Carbon, Hydrogen, Nitrogen, and Oxygen, which is disseminated in minute granules throughout the substance of the hair. It is not a little remarkable that, though in the feathers of the rook nearly the whole of the colouring matter is black, and only a small portion consists of brown-red pigment with a little yellow, yet in the hair of the Negro there is a considerable proportion of the red pigment; at all events, to ten times the extent in which it exists in the rook's feathers. The relationship between black and red hair was pointed out long ago by Dr. Beddoe. Red-haired Africans and Mulattoes are mentioned by Winterbottom and Blumenbach, and Prof. Boyd Dawkins informs me that at Aden, where it is the fashion for negroes to wear the hair perfectly white, by bleaching it with lime, it is not uncommon to see those in whom the process is

incomplete with heads of bright red hair. The question of comparatively sudden changes in the colour of the hair from dark to grey or white is still left unsolved, though looking at the constituents of the dark colouring matter, it appears quite possible that a comparatively simple chemical change in its composition might entirely remove the colour. The remarkable difference in the summer and winter colour of the hair of some Arctic animals, seems to show that such changes may readily occur; but the well-authenticated instances of those whose hair has grown "white in a single night, as men's have grown from sudden fears" are still uncommon, and any that may be observed would be well worthy of being brought under the notice of this Institute.

2. "Description of a Male Skeleton found at Cissbury," by Professor Rolleston, F.R.S. The history of the original owner of this skeleton, with platycnemic tibia, flattened humeri, and a markedly dolichocephalic skull, must be sought in the paper itself.

3. "On a new method of finding the Cephalic Index," by Mr. G. M. Atkinson. This ingenious application of a geometric method for working out a sum in proportion, is well deserving of attention, and the instrument suggested may prove to be a handy "ready reckoner."

4. "Notes on Skulls from Midian," by Professor Owen, C.B. and Dr. C. Carter Blake. Many of these skulls are of no great antiquity, but exhibit several varieties of type. The flatness of the palate is a curious feature in one of the types.

5. "On Resemblances between a Galtcha and a Savoyard Skull," by Dr. Paul Topinard. The similarity between these skulls is such that the author is inclined to regard the Galtchas of Eastern Turkistan and the Celts of Western Europe as branches of one common stock, of which the Slavs of Eastern Europe are also members. Some remarks on Savoyard and Galtcha skulls, by M. Hovelacque and M. de Ujfalvy, will be found in the "*Revue d'Anthropologie*" for the present month.

BIOLOGY—*Five Papers.*

1. "On the Natural Sign Language of the Deaf and Dumb," by Professor Graham Bell. It is much to be regretted that this interesting paper, or rather lecture, was not susceptible of being reproduced in our Journal. It must, however, be evident that without a series of illustrations which would have been beyond our means, the essence of the lecture which consisted of manual signs and "dumb show" could not be given. To those who have been accustomed to the use of language all their life, it is difficult to form an idea as to the extent by which the power of thought is aided by the unconscious power of clothing it in words. Among deaf mutes it would seem that thoughts become embodied in mental pictures, which though originally confined to visible objects, may, to some extent, especially under instruction from those endowed with speech, be extended to abstract ideas. A study of the symbols in use among the deaf and dumb is well calculated to throw light on the origin of language, for even if there be a certain amount of conventionality imported into it, yet in order that a symbol should be of service, it must convey some fixed idea to the mind of the person using it, as well as prove useful to him in his intercourse with others. How far this has been the case with the code mainly devised by the Abbé de l'Épée, is proved by the fact that English and French deaf mutes are able to converse together, and the signs are for the most part intelligible to the North American Indians. Notwithstanding this advantage and the greater difficulty there must be in acquiring the power of reading a written language, the latter form of education is, I believe, being universally adopted, not only as enabling the deaf and dumb to understand the written thoughts of others, but as giving them also a far greater power of accurate thought than could be afforded by mere symbols, however well contrived.

2. "Composite Portraits," by Mr. Francis Galton, F.R.S. The author's ingenious process of combining the portraits of a

number of persons, either exhibiting the same mental peculiarities or belonging to one family, so as to form but a single portrait, giving the average features of the group, is one which has been most successful in its results. As affording the means of obtaining a portrait, combining the different peculiarities which have struck different artists, it gives us a means by which, in many cases, a more correct idea of the personal appearance of distinguished men of former generations can be obtained than could be gathered from any single portrait which has come down to us, or from several of them if uncombined. But for anthropological purposes the method appears to be one by which the typical characteristics of any race may be brought into prominence by the combination of the portraits of several individuals, and thus obtaining an average; and also, as Mr. Galton has suggested, it will prove of great service by enabling us to compare the average features of the produce with those of the parentage, and facilitate inquiries into the hereditary transmission of features. Mr. A. L. Austin, in New Zealand, has independently struck out nearly a similar plan to that of Mr. Galton, and his letter, which is published in the paper by the latter, will be read with interest.

3. "Polygamous Marriages in South Africa," by Mr. J. Sanderson. These observations on the number of the children resulting from polygamous marriages, and the proportions of the sexes among them, though perhaps not founded on a sufficiently wide basis, are of considerable interest and will, it is hoped, be further extended.

4. "On some American Illustrations of the Evolution of New Varieties of Man," by Professor Daniel Wilson, LL.D. The object of this paper is to call attention to the fact that the Red Man of America, who is so commonly regarded as being doomed to extinction, is to a certain extent being absorbed among the white races, and is destined to exercise an enduring influence on the ethnical character of the Euro-American races. In Manitoba, for instance, are tribes of half-breeds in what he terms "as it were the process of evolution." Though this may be true for

the moment, it remains to be seen how far the influence of this admixture will be apparent after some few centuries have elapsed. It appears more probable that unless there are in the Red Indian race some special features which adapt it to the climate and surroundings, its traces will almost entirely disappear, and when the influence of constant arrivals of European Colonists ceases to be felt, the type of the white race occupying North America will become more specialized under local and climatic influences.

5. "Left-handed Races," by Dr Muirhead. This paper, containing some facts as to the prevalence of left-handedness in certain families, is closely allied to the paper on right-handedness communicated to this Institute last year by Mr. Shaw. As I observed in my last address, the habit of using the left hand in preference to the right, though possibly to some extent connected with the greater supply of blood to one side than the other, is more often the result of the manner in which the individual has been carried in infancy. A mother or nurse-maid, in order that her own right arm may be free, carries a baby on her left with its face towards her, thus leaving only its left arm at liberty and rendering its use, instead of the right arm, obligatory if the child is to make any use at all of the arm or hand. The habit thus acquired becomes fixed, and were it not for subsequent correction the number of left-handed persons among us would, I think, be far greater than it is.

PHILOLOGY.—*Two Papers.*

1. "A Vocabulary of the Zaparo Language," by Mr. A. Simson. This Glossary has already been mentioned.

2. "On some Characters tattooed on a Motu Woman," by Mr. J. Park Harrison. Among the figures tattooed on a Motu girl, carefully copied by Dr. Turner and engraved in our Journal, the author has pointed out a striking similarity to some literal forms in Sumatran, Indian and Phœnician alphabets. How far these New Guinea symbols may be relics of written characters, or how

far they may be the chance results of the combination of straight lines of nearly equal length so as to form a kind of geometrical ornament, is a question which has yet to be solved. A larger field of induction than that we at present possess appears to be highly desirable.

SOCIOLOGY.—*Five Papers.*

1. "The Pre-historic Civilisation of Babylonia," by Mr. W. St. Chad Boscawen. The cuneiform inscriptions of Babylonia, like the hieroglyphic writings of Egypt, seem destined not only to give us an accurate knowledge of much of the history of each country, but also to throw great light on the development of the art of writing; and by examination of the early pictorial forms of common objects, to illustrate the manners and customs of the early period when the characters were first adopted. The transition from the pictorial to the more conventional forms may be as readily traced in the Babylonian as in the Egyptian or Chinese Syllabaries, and Mr. Boscawen has done good service in directing our attention to this source of information as to the social life of those who devised the ideographs.

They belong to a period when a settled rather than a nomadic form of life had already been adopted, as is testified by the symbols for houses, estates, and even methods of irrigation:—Sheep and oxen were domestic animals; more than one kind of grain was known; and the city life was so far organised that the watchman was symbolised as the man "who goes to and fro."

We must not, therefore, expect that such symbols should throw light on the habits of their style in a state of absolute barbarism. It is rather some of the earliest stages of what may be rightly termed civilisation that are thus illustrated; and indeed we can hardly conceive of the development of any system even of pictorial writing among those in a lower stage than that represented in modern times by the North American Indian.

2. "The Origin of the Classificatory System of Relationships

used among Primitive Peoples," by Mr. C. Staniland Wake. In this elaborate paper, the author discusses the question of the probable origin of those remarkable systems of classification of relationships which prevail among the Hawaiians and other Polynesians, as well as among the Australians, the Malays, and the Chinese. It would be superfluous here to enter into the details either of the different classifications or of the reasons assigned for their existence. Mr. Wake, however, arrives at conclusions which to a considerable extent differ from those of Mr. Morgan, in America, and Mr. McLennan and Sir John Lubbock in this country. Though kinship in his opinion may, for certain purposes, have been originally traced through the mother—as being the parent which a wise child can proverbially most easily recognise—yet he regards the regulations as to marriage as based on the relation of the father to the child, and thinks that in the ideas which gave rise to those regulations also originated the classificatory system of relationships.

3. "Buddhism in the British Provinces of Little Tibet," by Colonel E. Paske. This paper, by an author for some time resident in the country of which he treats, will be found to contain some interesting details, though, perhaps, not so much of novelty as if Buddhism were now for the first time observed. The extent of the manis or dykes on which votive slabs are deposited, some in Ladakh being upwards of 800 paces in length—the necessity of moving to the right, whether in depositing a votive slab or in turning a Prayer Cylinder—the deposit of prayer flags on the highest accessible points, and the manner in which a Lama is made to form his own monument by his ashes being kneaded up with clay so as to form a "medallion figure," may be mentioned as points of interest.

4. "Ethnological Hints afforded by the Stimulants of the Ancients and the Modern Savages," by A. W. Buckland. This paper, which may be regarded as arising out of one by the same author on Primitive Agriculture, mentioned last year in my address, treats of the various stimulants that have been in use by man from the earliest times. The invention of fermented

drinks is thought to date back to the time when first the agricultural stage was attained by some members of the human race, though kounmiss and mead may belong to the pastoral or even the hunting stage. The various methods by which exhilarating and intoxicating drinks are produced, and the various materials employed, form the subject of a curious chapter in the history of man, who, as Byron says, "being reasonable, must get drunk."

5. "On Circumcision: Its significance, its origin, and its kindred rites," by Mr. E. Reclus. The practice of this custom has been traced over a large part of the inhabited globe, including Australia and South America, though among nations of antiquity the Egyptians and Jews are the nations among whom it is best known to have prevailed. For the author's views as to the origin of the practice, I must refer you to his paper. It seems to me, however, that probably more than one reason may have existed for its adoption among peoples so widely separated, though the views of the author as to its religious significance, in many cases, will commend themselves to most of his readers.

I have now given a brief, and I fear somewhat imperfect, account of the thirty-five papers which have been communicated to us since last I had the honour of addressing you, and I think that the Institute may well be congratulated upon their character. The proportion of Ethnological, Biological, and Sociological papers to those of a more purely Archæological character is considerably greater this year than last; which also I regard as a healthy symptom. Speaking generally, there appears to me a gradually increasing popular appreciation of the interest and importance of those Anthropological and Ethnological questions which it is our province here to discuss, and I hope that this appreciation may eventually lead to an increase in the number of our Members. I would venture to take this opportunity of impressing upon those who are interested in our pursuits, that the inability to attend our meetings and to take part in our discussions is no bar to membership, and that we shall gladly receive accessions of country members, who will find in our

Journal a record of all that passes in these rooms, and a medium of conveying to the world any communications of interest which they may wish to address to us. The slight difference in expense between purchasing our Journal from a bookseller and receiving it of right as a Member, ought not to deter anyone who is interested in Anthropology from joining our body, and thus promoting the advance of our science.

The exhibition, which during last year was held in Paris, must have awakened, in many of those who visited it, a desire to know more of the interest attaching to the collections there exhibited, and their bearing on the history of the human race, and it is to be hoped that in this country, as well as in France, benefits may result to the science of Anthropology.

The special exhibition organised by the Paris Anthropological Society was remarkably complete and successful. The treasures of the numerous local museums and private collections in France were there gathered together in wonderful abundance, and opportunity afforded for study and comparison such as never was known before, and will probably hardly ever again occur. Nor were other countries unrepresented, though of course geographical reasons as well as the great popularity of all anthropological studies in France enabled that country to stand pre-eminent. The course of lectures given in the building by M. Gabriel de Mortillet were I believe well attended, and much enhanced the value of the collection to those who were so fortunate as to attend the lectures. It is perhaps to be regretted that the collections illustrative of the early history of man were not all placed together, but divided between the Exposition des Sciences Anthropologiques, and the Galleries of the Trocadéro. This division may, however, have had the effect of calling the attention of a greater number of visitors to the subject, and certainly either of the divisions alone was enough to repay any foreign anthropologist for a journey to Paris.

The advantages of such a collection having been brought together would have been much enhanced by a comprehensive

catalogue which, however, owing to the delays attendant on the construction of the exhibition building, it appears to have been found impracticable to produce. It is to be hoped that our colleagues in Paris may yet publish some durable and complete record of the principal features of the collection.

The International Congress of Anthropological Science held in Paris under the presidency of Dr. Paul Broca was very successful, though it is much to be regretted that this country was so poorly represented at it. No doubt this was to some extent due to the fact that the Congress was held during the month of August, precisely at the time when the meeting of the British Association was being held in Dublin.

I may mention that it is proposed to organise another Anthropological Exhibition during the summer of the present year at Moscow. Those of our members who from time to time have attended the Congress of Anthropology and Pre-historic Archæology, which last was held at Buda Pesth, will be glad to learn that the Portuguese Government has decided to receive the Congress at Lisbon in 1880. May its meeting be as well attended, as pleasant and prosperous as were those at Stockholm and Buda Pesth!

The Folklore Society, the formation of which I mentioned in my address last year, is now fairly started, and the "Folklore Record," Part I, has already been published. It contains much matter that will be of interest to the members of this Institute, and will, I hope, be followed by many more volumes equally instructive and important.

Another Folklore Society is now in course of formation in a distant part of the globe, where, however, there seems to be great scope for its labours, and where its foundation seems most opportune. The existence of a rich store of traditions and myths among the natives of South Africa has long been known, but each successive year of European intercourse reduces the chance of its surviving in a written form. The South African Folklore Society is being formed just in time to preserve these curious native traditions, and it is to be hoped

that its journal, which is to appear six times a-year, may meet with due support. The annual subscription is, I believe, only four shillings, exclusive of postage, and the Secretary is Miss L. C. Lloyd, of Cape Town.

In my address to you last year, I mentioned the fact that Mr. Everett, a well-known naturalist, had consented to devote a twelvemonth to the prosecution of cave researches in Borneo, and that a fund was being raised to provide the necessary expenses, which will fall but little, if anything, short of £400. I have now to report that he commenced his labours early in October, and that he has already made more or less extensive excavations in several caves, the principal proceeds from which are now on their way to this country. I last night received Mr. Everett's first quarterly report, but have not yet had time to examine its contents. I may mention the discovery of numerous mammalian remains, the age of which has still to be determined, and also of remains of a race of men of whom no local tradition seems to be extant, and who habitually used the caves of Upper Sarawak, either as domiciles, or as places of sepulture, or possibly for other purposes. Though unknown to history or tradition, this race of men appears to have been acquainted with the use of manufactured iron, so that probably no great antiquity is to be assigned to the remains already discovered. I forbear from speculating on what further discoveries may be made, but I may congratulate the subscribers to the fund on the work being satisfactorily commenced. With regard to the fund itself, I venture to take this opportunity of stating that at least £100 more has to be forthcoming, and that I shall be happy to receive subscriptions. I may add that the British Association, following the example of the Royal Society, has voted £50 to the fund, which has also already received the support of many of the members of this Institute.

I cannot conclude this address without making some mention of the sad losses which this Institute and all those attached to the subject of prehistoric Archæology have sustained by death

within the last twelve months. The Report of the Council has already called attention to two of those losses—those of Mr. William Blackmore and Mr. E. T. Stevens. Closely connected together through marriage, as well as by kindred pursuits, and both of them in the prime of life, it is doubly sad that the loss of the one should so soon have followed that of the other. In Mr. William Blackmore we have lost a discerning and liberal promoter of anthropological science, and those among us who have visited the Blackmore Museum at Salisbury, founded and I believe mainly endowed through his liberality, will have no difficulty in appreciating how much the study of prehistoric archæology in this country is indebted to his labours and munificence. Those who have not had the opportunity of visiting the Collection will probably have made some acquaintance with it through Mr. E. T. Stevens's Guide, or his more comprehensive work, "*Flint Chips*," perhaps the best manual of the kind which has appeared in the English language, or indeed in any other. Those who, like myself, were personally acquainted with both these gentlemen, must feel that in them we have lost enthusiastic but judicious fellow-workers, whose places in the circle of our scientific acquaintance it is impossible ever to refill.

There is one other name which I must add, though he who bore it was not a member of this Institute—Mr. James Wyatt, of Bedford. It is now nearly twenty years ago since the discovery of palæolithic implements in ancient river gravels became an accepted fact in science, and among the spots in England first visited by Professor Prestwich and myself as likely to be productive of them were Bedford and Salisbury. Although at the time we were unsuccessful in our researches, the persevering industry of Mr. Stevens and his colleagues in the one place, and of Mr. Wyatt in the other, resulted in bringing numerous specimens to light, and largely extended the known range of the implement-bearing deposits. I can well remember the delight with which the first discoveries in Bedfordshire and Wilts were hailed by those who had given in their adhesion to the antiquity and authenticity of the palæolithic implements, and the enthusiasm with which

further search was prosecuted, and by none with greater intelligence and zeal than by Mr. Wyatt and Mr. Stevens, whose loss I shall long deplore. It is singular and sad that after so many years their names should again be associated under such different circumstances.

Of foreigners I must also mention one whose name is well known to the members of this Institute, the accomplished Professor Gastaldi, of Turin, whose work on the Lake Habitations and Pre-historic Remains of Northern and Central Italy was translated by Mr. Chambers, and published by the Anthropological Society in 1865.

Turning now from this sad retrospect, I will only add a few more words on the future prospects of this Institute. Looking at the fact that we are now the only Society in Great Britain which specially deals either with Ethnology or Anthropology, and looking at the advances which the study of those branches of science is making in foreign countries, and especially in France and Germany, I must confess to having some misgivings lest this country should appear to be left behind in the race. It is not, I think, that there are in any way wanting among us masters of the science quite as competent as any of those on the Continent and quite as devoted to its interests, but as I can testify from personal experience, there are in some cases other necessary pursuits which absorb too much of the time that would be gladly devoted to science, and in others, perhaps, the importance is not fully appreciated of making the Anthropological Institute and its publications—as being the principal if not indeed the only representatives of anthropological science in this country—hold their due rank in the friendly competition with neighbouring nations. However that may be, I feel that in vacating this chair in favour of anyone with more time at his disposal, and with more specialised anthropological knowledge than I possess, I am doing the Institute a service, and I cannot but look forward with pleasure to the probable welfare of this Society under one whose researches into the Primitive Culture and Early History of Man have

deservedly earned him so wide and distinguished a reputation as Mr. E. B. Tylor.

Mr. A. TYLOR moved, and Prof. FLOWER seconded a vote of thanks to the President; and that the Address be printed in the Journal of the Institute.

Carried by acclamation.

The Scrutineers then brought in their report of the ballot, and the following gentlemen were declared to be duly elected to serve for the ensuing year:—

President.—E. Burnett Tylor, Esq., D.C.L., F.R.S.

Vice-Presidents.—Hyde Clarke, Esq.; John Evans, Esq., D.C.L., F.R.S.; Prof. W. H. Flower, LL.D., F.R.S.; Major-General A. Lane Fox, F.R.S.; Francis Galton, Esq., F.R.S.; Prof. Rolleston, M.D., F.R.S.

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On the motion of Mr. E. BURNETT TYLOR, seconded by Mr. W. L. DISTANT, thanks were returned to the scrutineers.

On the motion of Mr. BRABROOK, seconded by Mr. J. E. PRICE, thanks were returned to the retiring members of Council, and was carried unanimously.

ANTHROPOLOGICAL MISCELLANEA.

DESCRIPTION OF A VILLAGE OF THE HYDAH INDIANS, NEAR SKEDIGATE BAY IN GRAHAM ISLAND, ONE OF THE QUEEN CHARLOTTE'S ISLANDS, OFF BRITISH COLOMBIA, from "The Sea of Mountains; an Account of Lord Dufferin's Tour through British Columbia in 1876." By M. St. John, Vol. II, 27, *et seq.*

"The village consists of about forty houses, each of which contains several families, as we found to be the case in most of these Indian settlements, and these houses are built in one continuous line, some little distance above high water mark. There are a few smaller houses or storehouses behind the others, but that which attracts the eye and rivets the attention at once, is the array of carved cedar pillars and crested monuments that rise in profusion throughout the length of the village. In the centre of the front face of every house was an upright pillar of cedar, generally about forty feet high, and from two to three feet in diameter. From base to top these pillars had been made to take the forms of animals and birds, and huge grotesque human figures, resembling somewhat the colossal figures recovered by the excavation at Nineveh. The birds and reptiles, curious and unlike as they were any that the Indians themselves see, one could understand; but there were griffins and other fabulous animals represented, that one would have imagined the carvers thereof had never heard of. The carvings were in some places elaborate, and in many places coloured. Some of the pillars a few yards in front of the houses were surmounted by life-size representations of birds or animals, the token of the family, coloured in a fanciful manner. In one or two instances there were outline carvings on a board surmounting a pillar, as a picture might be set on the top of a post. The main and tallest pillars, however, were those of which one formed the centre of each house, and through which entrance was had into the interior. Many of the rafters of the houses protruded beyond the eaves, and terminated in some grotesque piece of carving. The Indians could not tell the age of this village, nor had they any tradition on the subject, so far as we could discover. The village must, however, be some hundreds of

years old, for the cedar rafters in some houses were crumbling to pieces, and cedar lasts for centuries. Many of the pillars bore signs of being very old, but they are usually sound. Indian villages are usually so essentially only places of shelter against inclement weather, that the appearance of an Indian town of such indisputable age and with such evidences of dexterity in a branch of art, gave rise to endless wonderment and surmise. Whence did the Hydahs obtain the models from which they have copied, since they never could have seen what they carved about their dwellings? One of the party purchased a walking-stick with a small piece of workmanship on the handle, but the Indians passed it about amongst themselves, and none could tell what animal it was intended to represent. It seemed as if the parentage of the carving may have been in China, for one or two of the squatting figures had the same leer on their countenances that one sometimes sees on the figures in a Chinese Joss House." The Hydahs of Queen Charlotte's Islands are a fierce and turbulent nation, and the most feared of any natives on those coasts; they build enormous sea canoes, capable of holding thirty or forty warriors, and with their fleets used to sweep all the North Pacific coasts as far as Vancouver's Island, and the posts of the Hudson's Bay Company.

The Tsimshean Indians occupy the mainland of British Columbia, opposite the Queen Charlotte's Islands. The "Medicine-men" amongst them are still cannibals, and in orgies of hideous excitement, tear human bodies asunder with their teeth, and make a horrible feast of the fragments; the carved pillars and "crested monuments" described above, are found, though less characteristic and elaborate, in their villages also; and in a notice compiled by the Rev. J. Halcombe from the records of the Church Missionary Society, it is explained that with respect to the various devices "each crest is ruled over by four or five chiefs, one of whom takes precedence of all the others on ordinary occasions, and represents the crests in any general gathering. Among the representative chiefs, one again is always recognised as 'the chief of chiefs.' A chief's rank is marked by the height of the pole erected in front of his house, on which the crest which distinguishes his division of the tribe is carved. No offence leads to more frequent quarrels than the attempt on the part of a chief to put up a pole higher than his rank warrants. The animals most commonly selected as a crest are the porpoise, the eagle, the wolf, and the frog. The social relations of the people are in many ways regulated by this curious method of classification. Thus *e.g.*, members of the same crest may not intermarry. A whale may marry a frog: but the union of two whales or two frogs would be entirely without precedent."

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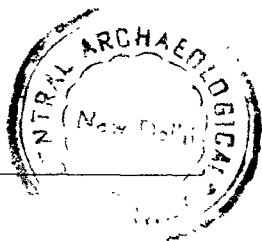
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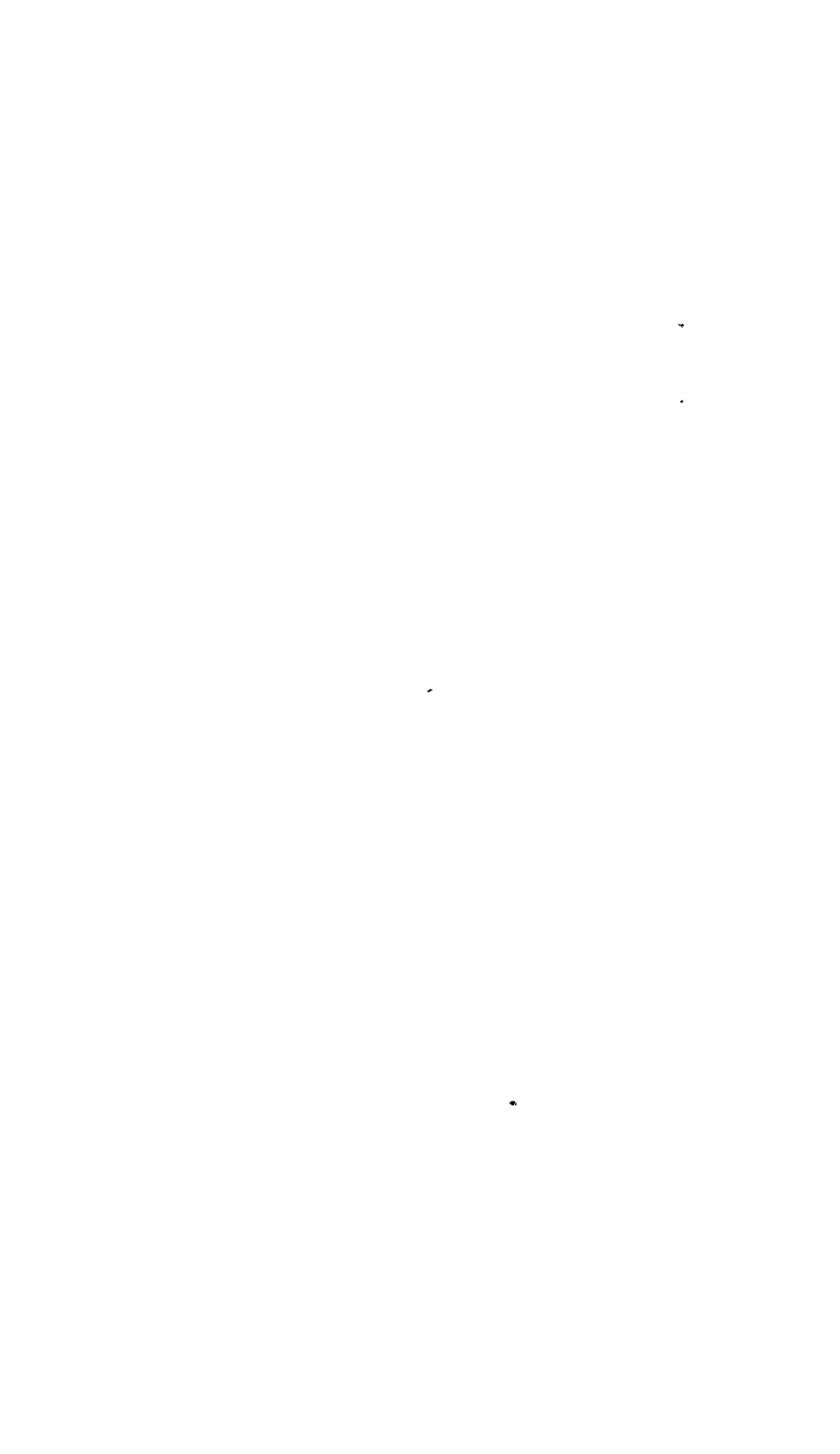
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